

# **AUTOMOBILES FLOOR MATS**

## **INTRODUCTION**

Rubber mats are used in automobiles like auto rickshaws, two wheelers, cars, jeeps, trucks, buses, and vans. They are used as floor materials for comfort, convenience, ease of cleaning and for improving the interior décor of the vehicle. These mats are available in different colours, patterns and shapes to suit the requirements of various vehicles. Sometimes, they are given a jute fabric backing for additional strength and durability.

## **MARKET**

With the two wheeler and the auto rickshaws population in the country growing in leaps and bounds in recent years, there is a tremendous demand for tubes for various kinds of tyres in the market, both for replacement as well as for OE. There is also a significant increase in the number of different kinds of scooters, auto rickshaws, motorcycles and mopeds manufactured by the various major manufacturers in the country like Bajaj, Hero Motors, TVS- Suzuki, Kinetic Engineering, Escorts etc. Among scooters the popular brands are Kinetic Honda, LML-Vespa, TVS-Scooty (Scooterette), Bajaj Sunny etc. Increasing number of these vehicles are being sold year after year and many new models like the four stroke scooters are also making their advent in the Indian market. Considering all these factors, there is a very good scope to start more tube manufacturing units in the country in the small scale sector.

India rank second in the production of two wheelers and fifth in commercial vehicles. With an investment of Rs. 50,000 crores, the turnover was Rs. 59,500 cores in Automotive Sector during 1999 – 2000. It employs 4,50,000 people directly and 100,00,000 people indirectly and is now inhabited by global majors in keen contention. India manufactures about 38,00,000 2-wheelers, 5,70,000 passenger cars, 1,25,000 Multi Utility Vehicles, 1,70,000 Commercial Vehicles and 2,60,000 tractors annually.

Since the establishment of the first rubber goods manufacturing unit in 1921, the Indian rubber industry has maintained its forward march, particularly during the post-

independence period. It has achieved overall expansion through increase in the range of products manufactured, in the number of units, in technological sophistication and self-sufficiency. Besides catering to the entire domestic demand, the industry is breaking new barriers on the export front. It projects tremendous growth in the 21<sup>st</sup> century

With around 6000 unit comprising 30 large scale, 300 medium scale and around 5600 SSI/tiny sector units, manufacturing 35000 rubber products, employing 400 thousand people, including around 22000 technically qualified support personnel, with a turnover of Rs.200 billions and contributing Rs.40 billions to the National Exchequer through taxes, duties and other levies, the Indian Rubber Industry plays a core sector role in the Indian national economy. The industry has certain distinct advantages like:

- ❖ An extensive plantation sector
- ❖ Indigenous availability of the basic raw materials, like natural rubber, synthetic rubber, reclaim rubber, carbon black, rubber chemicals, fatty acids, rayon and nylon yarn and so on.
- ❖ A large domestic market.
- ❖ Availability of cheap labour.
- ❖ Training facility in various technical institutes.
- ❖ On-going economic reforms.
- ❖ Improved living standards of the masses.

The wide range of rubber products manufactured by the Indian rubber industry comprises all types of heavy duty earth moving tyres. Auto tyres, tubes, automobile parts, footwear, belting, hoses, cycle tyres and tubes, cables and wires, camelback, battery boxes, latex products, pharmaceutical goods, besides moulded and extruded goods for mass consumption. The products manufactured also cover hi-tech industrial items. The important areas which the industry caters to include all the three wings of defence, civil, aviation, aeronautics, railways, agriculture, transport as also textile engineering industries, pharmaceuticals, mines, steel plants, ports, family planning programmes, hospitals, sports, practically to every conceivable field.

India's exports of rubber products, including tyres exceed Rs.2000 Crores. The range of products exported include automotive tyres and tubes, Rubber and canvas footwear, cycle tyres,

pharmaceutical goods, rubber hoses, cots and aprons, belts and beltings, sheeting etc. These products are exported to over 85 countries, including USA, Germany, France, U.K., Italy, UAE, Saudi Arabia, Africa, Afghanistan, Bangladesh etc.

With the saturation in rubber consumption in Western countries and the shift in consumption of rubber to the Asia Pacific region, the focal points for this decade for development will be India. The industry is expected to grow at over 8% p.a. in the coming decade. Taking into account the above prospects, the industry envisaged annual growth rate of 8% and the per capita consumption of rubber at 0.8 kg. against 14 kg. There exists tremendous scope for expansion and development in coming years provided basic raw materials, particularly natural and synthetic rubber, are made available in adequate quantity and at reasonable prices. Consumption of 1.25 million tones of rubber with per capita usage of 1.2 kgs. And exports of rubber goods worth Rs.30 billion seems possible by the year 2007

#### INSTALLED CAPACITY

Product	Installed capacity per hour	No of working hours per day	Capacity per day	Capacity per annum 300 days per annum
Auto mobiles floor mats	44	8	350	105 MT

#### PLANT AND MACHINERY

No.	Description	Qty (Nos)	Cost (Rs)
(i)	Production machinery, Tools & Equipments consisting of the following :	Whole Plant	32,00,000
	1. Mixing mill of size 16" x 42" with reduction gear, 60 HP motor & accessories.	1 No.	
	2. Extruder 4" size with 15 HP		

motor & accessories	1 No.	
3. Cutting arrangements for the Extrudate.		
4. Steam operated Hydraulic Press 36" × 36" Platen Size, 4 day light with motor, powerpack and other accessories.	2 nos.	
5. Moulds, Dies & Accessories		
6. Steam boiler-coal fired, 1000 kg/hr steam capacity and pressure of 10.54 kg/cm <sup>2</sup> with various motors, guages and accessories.		
7. Weighing scales:		
Platform type(100 Kg.)	1 No	
Single Pan type(10 Kg) Digital type	1 No.	
8. Miscellaneous Equipments		
(ii) Material Handling Equipments		1,00,000
(iii) Testing & Inspection equipments, tools & apparatus		2,00,000
<b>Total cost of machinery &amp; Equipments</b>		<b>35,00,000</b>

## MANUFACTURING PROCESS

The rubber is mixed with ingredients such as antioxidants, accelerators, fillers, plasticisers, anti-ageing compounds, pigments etc. in a mixing mill along with vulcanising agent such as sulphur, which is added towards the end. This compound should have the necessary characteristics for moulding and should impart the desired properties in the end product. After thorough mixing in the mixing mill, the compound is extruded to the desired shape and size and cut into suitable lengths to be introduced into moulds for shaping into mats of desired shape and pattern. In the moulds, the compound is subjected to heat and pressure for a particular period of time, when vulcanisation takes place. A hydraulic press with multi day light arrangement can be used for this purpose.

Now the finished mats are removed from the moulds and trimmed of any rind or flash. They are subsequently packed and sent for storage and despatch.

## RAW MATERIALS

For-Kgs	105000		
	Qty-kgs	Rate/kg	Value Rs. Lakhs
SBR	19200.00	120.00	23.04
WTR	9600.00	110.00	10.56
SRF black	7200.00	40.00	2.88
Soft clay	24000.00	5.00	1.20
Whiting	48000.00	4.00	1.92
Naphthanic oil	2400.00	25.00	0.60
Bitumen	1200.00	33.00	0.40
Zinc Oxide	840	60.00	0.50
Stearic Acid	360	30.00	0.11
PBN	240.00	100.00	0.24
Parfin wax	480.00	32.00	0.15
MBT	192.00	160.00	0.31
DPG	96.00	110.00	0.11
Sulphur	720.00	8.00	0.06
Miscellaneous Chemicals like talc etc			1.20
Total			43.27
Packing materials	105000	0.50	0.53

## UTILITIES

### Power & fuel

Three phase-	KW	75.00
Power charges Rs.lakhs p.a		8.55
Fuel-Rs	10000p.m	1.20
Power & fuel		9.75
For process-Litres per day		2000

For human consumption-litres/day 200

### LOCATION LAND AND BUILDING

Built up area-Sq.ft 2500  
 Rent p.m.-Rs per .5 per sq.ft 12500  
 Advance-10 months.Rs 125000

### MANPOWER

	Nos	Monthly wages	Total
Supervisor	1	8000	8000
Skilled	3	5000	15000
Unskilled	7	3000	21000
Accounts Assistant	1	4000	4000
Sales Executive	1	5000	5000
Security	2	2000	4000
sub total			57000
Add benefits		20%	11400
Total per month			68400
TOTAL PER ANNUM-Rs. lakhs			8.21

### COST OF PRODUCTION AND PROFITABILTY

#### Assumptions

Installed capacity	105 MT of various Automobile Floor Mats per annum
Capacity utilisation	Year-1 -60% Year -2 -70% Year-3 onwards- 80%
Selling price	Rs.90.00 per kg
Raw materials	As per the details given above
Packing materials	As per details given above
Power & Fuel	Rs.9.75 lakh per annum at 100%

Wages and salaries	Rs. 8.21 lakhs with increase 5% every year.
Repairs and Maintenance	Rs.0.60 lakh per annum
Depreciation	Written down value method -15 % on machinery
Selling general and administrative expenses	Rs.30000 per month
Interest on Term loan	11% per annum
Interest on working capital	11 % per annum
Income tax	33.66 % on profits

### **MACHINERY SUPPLIERS**

1. M/s.Indian Expeller Works Private Ltd, A-4, Naroda Industrial Estate  
Ahmedabad – 383 330.
2. M/s. Matharu Engineering Works, Plot No.1, Unit No.4, Opp. Tatwagyan Vidyapeeth  
Ghodbunder Road, Chitalsar, Thane - 400607
3. M/s. Modern Rubber Machinery Manufacturers Pvt. Ltd, 310, Jogani Industrial Estate  
541, Senapati Bapat Marg, Dadar, Mumbai – 400 028
4. M/s. Emson Industries, 6-A, Shri Ram Industrial Estate, Kaley Marg, Bail Bazar, Kurla  
Mumbai – 400 011
5. M/s. Modern Hydraulics, 5, Italian Building(Ground Floor), 381, Sane Gruji Marg  
Agripada, Near I.T.I, Mumbai – 400 011
6. M/s. Perumacheril Castings Industries, Market Landing, Kottayam – 686 001, Kerala
7. M/s. Hind Hydraulics & Engineers, E-43/1, Okhla industrial Area, Phase –II  
New Delhi – 110 002
8. M/s. Micromertics Engineers (P) Ltd. 298, 4<sup>th</sup> Floor, Khaleel Shiraji Estate  
Fountain Plaza, Pantheon Road, Egmore, Chennai – 600 028
9. M/s.Anant Engineering Works, Bassi Road, Sirihindi (N.Rly), Punjab – 140 406
10. M/s. Santhosh Industries, A-1, Sone Udyog, Parsi Panchayat Marg  
Andheri (East), Mumbai – 400 069

**(b) Steam Boilers**

1. M/s. Thermax Ltd, 610, Anna Salai, Chennai – 600 006
2. M/s. Maxima Boilers Pvt Ltd, 574/80, Mount Road, Congress Building, Teynampet, Chennai – 600 006
3. M/s. Firetech Boilers Pvt. Ltd, No.211, 2<sup>nd</sup> Cross, 38<sup>th</sup> Main, BTM Layout, 2<sup>nd</sup> Stage, Bangalore – 560 068
4. M/s. Maxtherm, K3, Ambattur Industrial Estate, Ambattur, Chennai – 600 058
5. M/s. Southern Boilers & Equipments Pvt. Ltd. Y- 169, 1<sup>st</sup> Street, Anna Nagar , Chennai – 600 040

**(c) Weighing Machines & Balances**

1. M/s. Giri Brothers Private Ltd, P.B.No 1646, No.51, Rajaji Salai, Chennai – 600 001
2. M/s. Tamilnadu Scale Industries, 166, Broadway, Chennai – 600 108

**(d) Testing & Measuring Instruments**

1. M/s. P.B.Shah & Co, 182, Linghi Chetty Street, Chennai – 600 001
2. M/s. Blue Star Ltd, 620, Anna Salai, Chennai – 600 006
3. Madras Metallurgical Services, 5, Lalithapuram Street, Royapettah, Chennai - 600014
4. M/s. Presto Stantest Pvt. Ltd, C-117, F.F. Complex, Okhla Industrial Area New Delhi – 110 020
5. M/s. Prolific Engineers, D-91, Sector – 2, Noida – 201 301
6. M/s. ABS instruments Pvt. Ltd, 22, Electronics Complex, Guindy, Chennai – 600 032

**(e) All miscellaneous equipments, tools, dies, moulds, fabricated items etc can be procured from local sources.**

**Suppliers of Raw Materials****(a) Rubber**

1. M/s. Viraj Rubbers Private Ltd, 2-A, GNT Road, Ponniannanmedu, Madhavaram Post Chennai – 600 110
2. M/s. Silpro Trading Co, 8, Venkataratnam Road, Teynampet , Chennai – 600 018



3. M/s. Arasu Rubber Corporation Ltd, 259, Anna Salai, Chennai – 600 006
4. M/s. R.K. polymer, 196/5, Govindappa Naicken Street, Chennai – 600 001
5. M/s. AVT Rubber products Ltd, 22, Marshalls Road, Egmore, Chennai – 600 008
6. M/s. Goodluck Rubber House, Apnagar, 103 Marshalls Road, Egmore  
Chennai – 600 008
7. M/s. Kurian Abraham Ltd, 13/1, 423 MS Road, Parvathipuram, Nagercoil – 629 001
8. M/s. Cochin Malabar Estates and Inds Ltd, 6/117, Race Course Road  
Coimbatore – 641 018

**(b) Rubber Chemicals**

1. M/s. Bayer India Ltd, 749, Anna Salai, Chennai – 600 002
2. M/s. National Organic Chemical industries Ltd, 8, Haddows Road, Chennai – 600 006
3. M/s. A.V. Thomas & Co (India) Ltd, 22, Marshalls Road, Egmore, Chennai – 600 008
4. M/s. Dujodwala Industries, 43, Armenian Street, Chennai – 600 001
5. M/s. Bharat Carbon Industries, 43, Buxipur Industrial Area, Gorakhpur – 273 001, U.P
6. M/s. Rubo-Chem Industries (P) Ltd, 403/404, Ixmi Commercial Complex, Senapati Bapat Marg, Mumbai – 400 028
7. M/s. I.C.I India Ltd, Rubber Chemicals Division, 149, Montieth Road, Chennai – 600 008
8. M/s. Monsanto Chemicals of India Ltd, F-4, Third Phase, Thiru Vi ka Industrial Estate  
Chennai – 600 097
9. M/s. Philips Carbon Black Ltd, 22, Marshalls Road, Egmore, Chennai – 600 008
10. M/s. R.K. Polymer, 196/5, Govindappa Naicken Street, Chennai – 600 001
11. M/s. South India Rubber & Chemicals, C-4, Ram Square, No.2 Village Road  
Nungabakkam, Chennai – 600 001
12. M/s. Manickavelu Corporation, Plot No. W-300, 19<sup>th</sup> Street, Sector – C, Anna Nagar  
Western Extn, Chennai – 600 101

## FINANCIAL ASPECTS

### 1. COST OF PROJECT

	[Rs. lakhs]
Land & Building (Advance)	1.25
Plant & Machinery	35.00
Other Misc. assets	0.50
Pre-Operative expenses	2.00
Margin for WC	1.30
	40.05

### 2. MEANS OF FINANCE

Capital	13.80
Term Loan	26.25
	40.05

Term Loan amount is assumed at 75% of the value Machinery

### 3. COST OF PRODUCTION & PROFITABILITY STATEMENT

	[Rs. lakhs]				
Years	1	2	3	4	5
Installed Capacity-MTs	105	105	105	105	105
Utilisation	60%	70%	80%	80%	80%
Production/Sales-MTs	63	74	84	84	84
Selling Price per MT -Rs.	0.90lakhs				
Sales Value (Rs. lakhs)	<b>56.70</b>	<b>66.60</b>	<b>75.60</b>	<b>75.60</b>	<b>75.60</b>
Raw Materials	25.96	30.29	34.62	34.62	34.62
Packing Materials	0.32	0.37	0.42	0.42	0.42
Power& fuel	5.85	6.83	7.80	7.80	7.80
Wages & Salaries	8.21	8.62	9.05	9.50	9.98

Repairs & Maintenance	0.60	0.66	0.73	0.80	0.88
Depreciation	5.25	4.46	3.79	3.22	2.74
Cost of Production	46.19	51.23	56.41	56.36	56.44
Selling, Admin, & General exp	3.60	3.78	3.97	4.17	4.38
Interest on Term Loan	2.89	2.53	1.81	1.08	0.36
Interest on Working Capital	0.49	0.49	0.49	0.49	0.49
Total	53.17	58.03	62.68	62.10	61.67
Profit Before Tax	3.53	8.57	12.92	13.50	13.93
Provision for tax	1.19	2.88	4.35	4.54	4.69
Profit After Tax	<b>2.34</b>	<b>5.69</b>	<b>8.57</b>	<b>8.96</b>	<b>9.24</b>
Add: Depreciation	5.25	4.46	3.79	3.22	2.74
Cash Accruals	7.59	10.15	12.36	12.18	11.98
Repayment of Term loan	0.00	6.56	6.56	6.56	6.57

#### 4. WORKING CAPITAL:

	Months Consumptions	Values	%	Margin Amount	Bank Finance
Raw Materials	0.50	1.08	25%	0.27	0.81
Consumables	2.00	0.05	25%	0.01	0.04
Finished goods	0.50	1.92	25%	0.48	1.44
Debtors	0.50	2.36	10%	0.24	2.12
Expenses	1.00	0.30	100%	0.30	0.00
		5.71		1.30	4.41

## 5. PROFITABILITY RATIOS BASED ON 80% UTILISATION

<u>Profit after Tax</u>	=	<u>8.57</u>	11%
Sales		75.60	
<u>Profit before Interest and Tax</u>	=	<u>15.22</u>	34%
Total Investment		44.46	
<u>Profit after Tax</u>	=	<u>8.57</u>	62%
Promoters Capital		13.80	

## 6. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs. lakhs]
Wages & Salaries	9.05
Repairs & Maintenance	0.73
Depreciation	3.79
Admin. & General expenses	3.97
Interest on TL	1.81
	19.35
Profit Before Tax (P)	12.92

$$\text{BEL} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{19.35}{32.27} \times \frac{80}{100} \times 100$$

48% of installed capacity  
which is sales volume

of RS.45.38 lacs or  
Production volume of  
50.4 MTs.

# **AUTOMOBILE RUBBER CHANNELS & BEADINGS**

## **INTRODUCTION**

The channels and beadings used in the automobiles are door seals , engine mounting strips, wind screen and rear window strips, Q-channels, truck lid seals etc. The rubber is extruded to manufacture the aforementioned items. The machinery and equipments required for the production of these items are easily available from indigenous sources. The technology of their production is also very simple.

## **MARKET**

Since automobile channels and beadings form an integral part of the automobiles, their consumption is directly related to the vehicle population of the country and the yearly production of various automobiles. With a tremendous growth in the number of joint ventures with foreign collaborations for manufacturing a variety of new cars, trucks and jeeps in the country and also many indigenous manufacturers increasing their production, while also introducing newer models of vehicles, the automobile sector is expected to grow in leaps and bounds in the years to come. Further there is a good replacement market also, for these rubber items as they are periodically replaced due to wear and tear. There is also a good export potential for these products.

India rank second in the production of two wheelers and fifth in commercial vehicles. With an investment of Rs. 50,000 crores, the turnover was Rs. 59,500 cores in Automotive Sector during 1999 – 2000, it employs 4,50,000 people directly and 100,00,000 people indirectly and is now inhabited by global majors in keen contention. India manufactures about 38,00,000 2-wheelers, 5,70,000 passenger cars, 1,25,000 Multi Utility Vehicles, 1,70,000 Commercial Vehicles and 2,60,000 tractors annually.

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sufficiency. Besides catering to the entire domestic demand, the industry is breaking new barriers on the export front. It projects tremendous growth in the 21<sup>st</sup> century. With around 6000 units comprising 30 large scale, 300 medium scale and around 5600 SSI/tiny sector units, manufacturing 35000 rubber products, employing 400 thousand people, including around 22000 technically qualified support personnel, with a turnover of Rs.200 billions and contributing Rs.40 billions to the National Exchequer through taxes, duties and other levies, the Indian Rubber Industry plays a core sector role in the Indian national economy. The industry has certain distinct advantages like:

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### INSTALLED CAPACITY

Product	Installed capacity per hour	No of working hours per day	Capacity per day	Capacity per annum 300 days per annum
Automobile rubber channels & beadings	13.75 kgs	16	220 kgs	66 MT

### PLANT AND MACHINERY

No.	Description	Qty (Nos)	Cost (Rs.)
(i)	Production machinery, Tools & Equipments consisting of the following:	Whole plant	16,00,000
	1. Mixing mill of size 14" x 36" with reduction gear, 40HP motor & accessories	1 No.	
	2. Extruder 3"(75mm), with 10 HP motor & accessories.	1 No.	
	3. Horizontal-Direct Steam Heating type		



Steam Vulcaniser of size 4" dia. and 10" long.	1 No.	
4. Baby Boiler 150 Kgs/hr. steam Capacity	1 No.	
5. Hand fly press, electrically heated complete with strip heaters, panel control for rubber moulding, size 12" x 12".	2 Nos.	
6. Extruder Die and Various Moulds.		
7. Miscellaneous equipments like rectangular and circular GI trays, tools and tackles.		
8. Weighing scales:		
Platform type(100 Kg)	1 No.	
Single Pan type (10Kg.) Digital type	1 No.	
(ii) Material handling equipments		50,000
(iii) Testing & Inception equipments, tools & apparatus		1,50,000
<b>Total cost of machinery &amp; equipments</b>		<b>18,00,000</b>

## MANUFACTURING PROCESS

### 1. Process Outline

Rubber is mixed with all the necessary ingredients in a two roll mixing mill. The mixed stock is then slabbed off and kept for maturation for about 24 hours. The matured stock is then pre-warmed in the mixing mill and long ribbon shaped pieces are cut from the mill roll, which are then fed into an extruder fitted with the requisite die to form the component. The extrudate is collected in metal trays and is transferred to the autoclave or steam vulcaniser for curing. For endless channels like wind-screen channels of trucks and cars, the long channel is taper-cut at necessary length and joined together by applying adhesive at the ends. The joints are then cured using a hand fly press equipped with moulds having grooves corresponding to the shape of the channels.

## RAW MATERIALS

For-lakhs nos	66000		
	Qty-kgs	Rate/kg	Value Rs lakhs
Natural Rubber	21600	80.00	17.28
Zinc Oxide	1800	60.00	1.08
Stearic Acid	600	30.00	0.18
Vulkanox-4020	300	120.00	0.36
Clay	24000	5.00	1.20
Whiting	6000	4.00	0.24
FEF Black	6000	40.00	2.40
Process Oil	1800	25.00	0.45
Paraffin Wax	300	32.00	0.10
CBS	300	215.00	0.65
Sulphur	780	8.00	0.06
Miscellaneous Chemicals like talc etc			1.20
			25.20
Packing materials	66000	0.50	0.33

## UTILITIES

### Power & Fuel

Three phase-	KW	45.00
Power charges Rs.lakhs p.a		10.26
Fuel-Rs	10000p.m	1.20
Power & fuel		11.46
For process-Litres per day		2000
For human consumption-litres/day		200

## LOCATION LAND AND BUILDING

Built up area-Sq.ft	2000
Rent p.m.-Rs per .5 per sq.ft	10000
Advance-10 months .Rs	100000

## MANPOWER

	Nos	Monthly wages	Total
Supervisor	1	8000	8000
Skilled	2	5000	10000
Unskilled	12	3000	36000
Accounts Assistant	1	4000	4000
Sales Executive	1	5000	5000
Security	2	2000	4000
sub total			67000
Add benefits		20%	13400
Total per month			80400
TOTAL PER ANNUM-Rs. lakhs			9.65

## COST OF PRODUCTION AND PROFITABILTY

### Assumptions

Installed capacity	66.00 MT of various types of Automobile Channels & Beadings per annum
Capacity utilisation	Year-1 -60% Year -2 -70% Year-3 onwards- 80%
Selling price	Rs.110.00 per kg
Raw materials	As per the details given above
Packing materials	As per details given above
Power & Fuel	Rs.11.46 lakhs per annum at 100%
Wages and salaries	Rs. 9. 65 lakhs with increase 5% every year.
Repairs and Maintenance	Rs.0.60 lakh per annum with 10% increase every year
Depreciation	Written down value method -15 % on machinery
Selling general and	Rs.30000 per month with 5% increase every

administrative expenses	year.
Interest on Term loan	11% per annum
Interest on working capital	11 % per annum
Income tax	33.66 % on profits

## **MACHINERY SUPPLIERS**

1. M/s.Indian Expeller Works Private Ltd, A-4, Naroda Industrial Estate  
Ahmedabad – 383 330
2. M/s. Matharu Engineering Works, Plot No.1, Unit No.4, Opp. Tatwagyan Vidyapeeth  
Ghodbunder Road, Chitalsar, Thane - 400607
3. M/s. Modern Rubber Machinery Manufacturers Pvt. Ltd, 310, Jogani Industrial Estate  
541, Senapati Bapat Marg, Dadar, Mumbai – 400 028
4. M/s. Emson Industries, 6-A, Shri Ram Industrial Estate, Kaley Marg, Bail Bazar, Kurla  
Mumbai – 400 011
5. M/s. Modern Hydraulics, 5, Italian Building(Ground Floor), 381, Sane Gruji Marg  
Agripada, Near I.T.I, Mumbai – 400 011
6. M/s. Perumacheril Castings Industries, Market Landing, Kottayam – 686 001, Kerala
7. M/s. Hind Hydraulics & Engineers, E-43/1, Okhla industrial Area, Phase –II  
New Delhi – 110 002
8. M/s. Micromertics Engineers (P) Ltd., 298, 4<sup>th</sup> Floor, Khaleel Shiraji Estate  
Fountain Plaza, Pantheon Road, Egmore, Chennai – 600 028
9. M/s.Anant Engineering Works, Bassi Road, Sirihindi (N.Rly), Punjab – 140 406
10. M/s. Santhosh Industries, A-1, Sone Udyog, Parsi Panchayat Marg, Andheri (East)  
Mumbai – 400 069

### **(b) Steam Boilers**

1. M/s. Thermax Ltd, 610, Anna Salai, Chennai – 600 006
2. M/s. Maxima Boilers Pvt Ltd, 574/80, Mount Road, Congress Building, Teynampet,  
Chennai – 600 006.

3. M/s. Firetech Boilers Pvt. Ltd, No.211, 2<sup>nd</sup> Cross, 38<sup>th</sup> Main, BTM Layout, 2<sup>nd</sup> Stage, Bangalore – 560 068
4. M/s. Maxtherm, K3, Ambattur Industrial Estate, Ambattur, Chennai – 600 058
5. M/s. Southern Boilers & Equipments Pvt. Ltd, Y- 169, 1<sup>st</sup> Street, Anna Nagar , Chennai – 600 040

**(c) Weighing Machines & Balances**

1. M/s. Giri Brothers Private Ltd, P.B.No 1646, No.51, Rajaji Salai, Chennai – 600 001
2. M/s. Tamilnadu Scale Industries,166, Broadway, Chennai – 600 108

**(d) Testing & Measuring Instruments**

1. M/s. P.B.Shah & Co,182, Linghi Chetty Street, Chennai – 600 001
2. M/s. Blue Star Ltd, 620, Anna Salai, Chennai – 600 006
3. Madras Metallurgical Services, 5, Lalithapuram Street, Royapettah, Chennai - 600014
4. M/s. Presto Stantest Pvt. Ltd, C-117, F.F. Complex, Okhla Industrial Area, New Delhi – 110 020
5. M/s. Prolific Engineers, D-91, Sector – 2, Noida – 201 301,
6. M/s. ABS instruments Pvt. Ltd, 22, Electronics Complex, Guindy, Chennai – 600 032

**(e) All miscellaneous equipments, tools, dies, moulds, fabricated items etc can be procured from local sources.**

**Suppliers of Raw Materials**

**(a) Rubber**

1. M/s. Viraj Rubbers Private Ltd, 2-A, GNT Road, Ponniannanmedu, Madhavaram Post Chennai – 600 110
2. M/s. Silpro Trading Co, 8, Venkataratnam Road, Teynampet, Chennai – 600 018

3. M/s.Arasu Rubber Corporation Ltd, 259, Anna Salai, Chennai – 600 006
4. M/s. R.K.polymer,196/5, Govindappa naicken Street, Chennai – 600 001
5. M/s. AVT Rubber products Ltd, 22, Marshells Road, Egmore, Chennai – 600 008
6. M/s. Goodluck Rubber House, Apnagar, 103 Marshells Road, Egmore  
Chennai – 600 008
7. M/s. Kurian Abraham Ltd, 13/1, 423 MS Road, Parvathipuram, Nagercoil – 629 001
8. M/s. Cochin Malabar Estates and Inds Ltd, 6/117, Race Course Road,  
Coimbatore – 641 018

**(b) Rubber Chemicals**

1. M/s. Bayer India Ltd, 749, Anna Salai, Chennai – 600 002
2. M/s. National Organic Chemical industries Ltd, 8, Haddows Road, Chennai – 600 006
3. M/s. A.V.Thomas & Co(India) Ltd, 22, Marshalls Road, Egmore, Chennai – 600 008
4. M/s. Dujodwala Industries, 43, Armenian Street, Chennai – 600 001
5. M/s. Bharat Carbon Industries, 43, Buxipur Industrial Area, Gorakhpur – 273 001, U.P
6. M/s.Rubo-Chem Industries(P) Ltd, 403/404, Iaxmi Commercial Complex  
Senapati Bapat Marg, Mumbai – 400 028
7. M/s. I.C.I India Ltd, Rubber Chemicals Division, 149, Montieth Road,  
Chennai – 600 008
8. M/s. Monsanto Chemicals of India Ltd, F-4, Third Phase, Thiru Vi ka Industrial Estate  
Chennai – 600 097
- 9.M/s. Philips Carbon Black Ltd, 22, Marshalls Road, Egmore, Chennai – 600 008
10. M/s. R.K.Polymer,196/5, Govindappa Naicken Street, Chennai – 600 001
11. M/s. South India Rubber & Chemicals, C-4, Ram Square, No.2 Village Road  
Nungabakkam, Chennai – 600 001
12. M/s. Manickavelu Corporation, Plot No. W-300, 19<sup>th</sup> Street, Sector – C,  
Anna Nagar Western Extn, Chennai – 600 101.

## FINANCIAL ASPECTS

### 1. COST OF PROJECT

	[Rs. lakhs]
Land & Building (Advance)	1.00
Plant & Machinery	18.00
Other Misc. assets	0.50
Pre-Operative expenses	2.00
Margin for WC	1.02
	22.52

### 2. MEANS OF FINANCE

Capital	9.02
Term Loan	13.50
	22.52

Term Loan amount is assumed at 75% of the value Machinery

### 3. COST OF PRODUCTION & PROFITABILITY STATEMENT

	[Rs. lakhs]				
Years	1	2	3	4	5
Installed Capacity-MTs	66	66	66	66	66
Utilisation	60%	70%	80%	80%	80%
Production/Sales-MTs	40	46	53	53	53
Selling Price per MT -Rs.	1.10lakhs				
Sales Value (Rs.lakhs)	<b>44.00</b>	<b>50.60</b>	<b>58.30</b>	<b>58.30</b>	<b>58.30</b>
Raw Materials	15.12	17.64	20.15	20.15	20.15

Packing Materials	0.20	0.23	0.26	0.26	0.26
Power& fuel	6.88	8.02	9.17	9.17	9.17
Wages & Salaries	9.65	10.13	10.64	11.17	11.73
Repairs & Maintenance	0.60	0.66	0.73	0.80	0.88
Depreciation	2.70	2.30	1.95	1.66	1.41
Cost of Production	35.15	38.98	42.90	43.21	43.60
Selling, Admin, & General exp	3.60	3.78	3.97	4.17	4.38
Interest on Term Loan	1.49	1.30	0.93	0.56	0.18
Interest on Working Capital	0.36	0.36	0.36	0.36	0.36
Total	40.60	44.42	48.16	48.30	48.52
Profit Before Tax	3.40	6.19	10.14	10.00	9.78
Provision for tax	1.15	2.08	3.41	3.37	3.29
Profit After Tax	<b>2.25</b>	<b>4.11</b>	<b>6.73</b>	<b>6.63</b>	<b>6.49</b>
Add: Depreciation	2.70	2.30	1.95	1.66	1.41
Cash Accruals	4.95	6.40	8.68	8.29	7.90
Repayment of Term loan	0.00	3.38	3.38	3.38	3.36

#### 4. WORKING CAPITAL:

	Months Consumptions	Values	%	Margin Amount	Bank Finance
Raw Materials	0.50	0.63	25%	0.16	0.47
Consumables	2.00	0.03	25%	0.01	0.02
Finished goods	0.50	1.46	25%	0.37	1.09
Debtors	0.50	1.83	10%	0.18	1.65
Expenses	1.00	0.30	100%	0.30	0.00
		4.25		1.02	3.23



## 5. PROFITABILITY RATIOS BASED ON 80% UTILISATION

<u>Profit after Tax</u>	=	<u>6.73</u>	12%
Sales		58.30	
<u>Profit before Interest and Tax</u>	=	<u>11.43</u>	44%
Total Investment		25.75	
<u>Profit after Tax</u>	=	<u>6.73</u>	75%
Promoters Capital		9.02	

## 6. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs. lakhs]
Wages & Salaries	10.64
Repairs & Maintenance	0.73
Depreciation	1.95
Admin. & General expenses	3.97
Interest on TL	0.93
	18.22
 Profit Before Tax (P)	 10.14

$$\text{BEL} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{18.22}{28.36} \times \frac{80}{100} \times 100$$

51% of installed capacity

which is our sales volume of Rs.37.39 lacs  
or production volume 33.66 MT

# **ELASTIC TAPES**

## **INTRODUCTION**

Garment forms one of the basic needs of human being. In a country like India with growing population, the increase in demand for the readymade garments is a continuing process. A good dress should give importance to three basic parameters. These are comfort to wearer, matching colours and climate adjustments.

Elastic tapes are required for the purpose of holding the garments tightly when it is worn by the person. In addition to providing comfort, it also increases the life of the garments. Generally, the elastic tapes are used in undergarments like briefs. Panties, brassieres, baggies, children's dress etc. It is also used in suitcases for inside straps for better grip holding and in car seats for safety driving etc.

## **MARKET POTENTIAL**

With the increasing demand for the undergarments and readymade garments, there is enough scope for the garments ancillary units including the elastic tapes. There is always good demand for the elastic tapes.

Since the establishment of the first rubber goods manufacturing unit in 1921, the Indian rubber industry has maintained its forward march, particularly during the post-independence period. It has achieved overall expansion through increase in the range of products manufactured, in the number of units, in technological sophistication and self-sufficiency. Besides catering to the entire domestic demand, the industry is breaking new barriers on the export front. It projects tremendous growth in the 21<sup>st</sup> century

With around 6000 unit comprising 30 large scale, 300 medium scale and around 5600 SSI/tiny sector units, manufacturing 35000 rubber products, employing 400 thousand people, including around 22000 technically qualified support personnel, with a turnover

of Rs.200 billions and contributing Rs.40 billions to the National Exchequer through taxes, duties and other levies, the Indian Rubber Industry plays a core sector role in the Indian national economy. The industry has certain distinct advantages like:

#### An extensive plantation sector

Indigenous availability of the basic raw materials, like natural rubber, synthetic rubber, reclaim rubber, carbon black, rubber chemicals, fatty acids, rayon and nylon yarn and so on.

- ❖ A large domestic market.
- ❖ Availability of cheap labour.
- ❖ Training facility in various technical institutes.
- ❖ On-going economic reforms.
- ❖ Improved living standards of the masses.

The wide range of rubber products manufactured by the Indian rubber industry comprises all types of heavy duty earth moving tyres. Auto tyres, tubes, automobile parts, footwear, belting, hoses, cycle tyres and tubes, cables and wires, camelback, battery boxes, latex products, pharmaceutical goods, besides moulded and extruded goods for mass consumption. The products manufactured also cover hi-tech industrial items. The important areas which the industry caters to include all the three wings of defence, civil, aviation, aeronautics, railways, agriculture, transport as also textile engineering industries, pharmaceuticals, mines, steel plants, ports, family planning programmes, hospitals, sports, practically to every conceivable field.

India's exports of rubber products, including tyres exceed Rs.2000 Crores. The range of products exported include automotive tyres and tubes, Rubber and canvas footwear, cycle tyres, pharmaceutical goods, rubber hoses, coats and aprons, belts and beltings, sheeting etc. These products are exported to over 85 countries, including USA, Germany, France, U.K., Italy, UAE, Saudi Arabia, Africa, Afghanistan, Bangladesh etc.

With the saturation in rubber consumption in Western countries and the shift in consumption of rubber to the Asia Pacific region, the focal points for this decade for development will be India. The industry is expected to grow at over 8% p.a. in the coming decade. Taking into account the above prospects, the industry envisaged annual growth rate of 8% and the per capita consumption of rubber at 0.8 kg. against 14 kg. There exists tremendous scope for expansion and development in coming years provided basic raw materials, particularly natural and synthetic rubber, are made available in adequate quantity and at reasonable prices. Consumption of 1.25 million tones of rubber with per capita usage of 1.2 kgs. And exports of rubber goods worth Rs.30 billion seems possible by the year 2007

#### **INSTALLED CAPACITY**

Product	Installed capacity per hour	No of working hours per day	Capacity per day	Capacity per annum 300 days per annum
Elastics Tape	700 metres	8	5600 metres	1680000 metres

#### **PLANT AND MACHINERY**

SI.No.	Description	Qty/ Nos	Cost (R.s)
1.	High-speed needle loom 12:shaft front reed 12” without back frame and beam Model 6/27 varitex.	2	10 50 000
2.	Warping machine type b 350 mm dia and 250 mm width with warp speed 180 mts./ min. max.	1	1 50 000
3.	Creel for 250 ends	1	1 00 000
4.	Aluminum flanged beams bolted	50	50 000
5.	Finishing machine series Fs-2 main drum guide rollers made of SS 304 dia 800mm, length 1210mm,	1	2 50 000

	38 heaters, maximum speed 36 mts./ min.		
6.	Back frames	3	15 000
7.	Measuring and winding machine suitable for making rolls up to 30mm. Dia	1	50 000
8.	Fire fighting equipments	LS	15 000
9.	Lab equipments	LS	20 000
	<b>Total</b>		<b>17 00 000</b>

## MANUFACTURING PROCESS

### 1. Process Outline

Different types of yarn like viscose, nylon and cotton and placed on creel for working purpose as per design. Warping prepared on warping machine. It is to be ensured that no loose threads are present in the warp sheet in order to run the machine without stoppage. Prepared warp beam is shifted to needle loom and individual threads are drawn as per design. When the machine starts weaving, the woven tapes will come out of the machine and finally wound on the rolls, After finishing on finishing machine, rolls and packed into polythene packs for supply to the customers.

## RAW MATERIALS

For-Metres	1680000		
	Qty-kgs	Rate/kg	Value Rs lakhs
Crimped Nylon yarn	12000.00	230.00	27.60
Viscose	9000.00	90.00	8.10
32s cotton yarn	9000.00	105.00	9.45
Latex thread	9300.00	100.00	9.30
Glue/starch	1200.00	10.00	0.12
			54.57
Packing materials	1680000	0.10	1.68

## UTILITIES

### Power & Fuel

Three phase-	KW	70.00
Power charges Rs. lakhs p.a		7.98
Power & fuel		7.98
For process-Litres per day		0
For human consumption-litres/day		200

## LOCATION LAND AND BUILDING

Built up area-Sq.ft	1000
Rent p.m.-Rs per .5 per sq.ft	5000
Advance-10 months. Rs	50000

## MANPOWER

		Monthly wages	Total
Supervisor	1	8000	8000
Skilled	2	5000	10000
Unskilled	4	3000	12000
Accounts Assistant	1	4000	4000
Sales Executive	1	5000	5000
Security	2	2000	4000
sub total			43000
Add benefits		20%	8600
Total per month			51600
TOTAL PER ANNUM-Rs. lakhs			6.19

## COST OF PRODUCTION AND PROFITABILTY

### Assumptions

Installed capacity	16.80 lakh metres of various elastic tapes per annum
Capacity utilisation	Year-1 -60% Year -2 -70%

	Year-3 onwards- 80%
Selling price	Rs.5.50 per metres
Raw materials	As per the details given above
Packing materials	As per details given above
Power & Fuel	Rs.7.98 lakhs per annum at 100%
Wages and salaries	Rs. 6.19 lakhs with increase 5% every year.
Repairs and Maintenance	Rs.0.60 lakh per annum with 10% annual increase
Depreciation	Written down value method -15 % on machinery
Selling general and administrative expenses	Rs.30000 per month with 5% annual increase
Interest on Term loan	11% per annum
Interest on working capital	11 % per annum
Income tax	33.66 % on profits

### **MACHINERY SUPPLIERS**

1. M/s. Baku Bhai Ambalal, 3-Madrwah Estate, Saki Vihar Road, Sakinaka, Mumbai-72.
2. M/s. Prashant Engg. Co. Plot No. 4/1-I, GIDC Estate, Vatva, Ahemedabad-382445.

### **SUPPLIERS OF RAW MATERIALS**

1. M/s. Moupan Ltd. Modi Nagar, (U.P.)
2. M/s. Lohia Machine Ltd. (Fiber Div.) C-3 and 4, Panki Industrial Estate, Kanpur.
3. M/s. Vardhman Spinning and Gen. Mills Ltd. Chandigarh Road, Ludhiana.
4. M/s. India Spinners and processors 5309, Basti Harphool Singh, Delhi-110006.

## FINANCIAL ASPECTS

### 1. COST OF PROJECT

	[Rs. lakhs]
Land & Building (Advance)	0.50
Plant & Machinery	17.00
Other Misc. assets	0.50
Pre-Operative expenses	2.00
Margin for WC	1.41
	21.41

### 2. MEANS OF FINANCE

Capital	8.66
Term Loan	12.75
	21.41

Term Loan amount is assumed at 75% of the value Machinery

### 3. COST OF PRODUCTION & PROFITABILITY STATEMENT

	[Rs. lakhs]				
Years	1	2	3	4	5
Installed Capacity-Metres	1680000	1680000	1680000	1680000	1680000
Utilisation	60%	70%	80%	80%	80%
Production/Sales-Metres	1008000	1176000	1344000	1344000	1344000
Selling Price per meter -Rs.	5.50				
Sales Value (Rs. lakhs)	<b>55.44</b>	<b>64.68</b>	<b>73.92</b>	<b>73.92</b>	<b>73.92</b>
Raw Materials	32.74	38.20	43.66	43.66	43.66
Packing Materials	1.01	1.18	1.34	1.34	1.34
Power& fuel	4.79	5.59	6.38	6.38	6.38
Wages & Salaries	6.19	6.50	6.83	7.17	7.53
Repairs & Maintenance	0.60	0.66	0.73	0.80	0.88
Depreciation	2.55	2.17	1.84	1.57	1.33
Cost of Production	47.88	54.30	60.78	60.92	61.12
Selling, Admin, & General exp	3.60	3.78	3.97	4.17	4.38
Interest on Term Loan	1.40	1.23	0.88	0.53	0.17
Interest on Working Capital	0.52	0.52	0.52	0.52	0.52
Total	53.40	59.83	66.15	66.14	66.19
Profit Before Tax	2.04	4.85	7.77	7.78	7.73
Provision for tax	0.69	1.63	2.61	2.62	2.60
Profit After Tax	<b>1.35</b>	<b>3.22</b>	<b>5.16</b>	<b>5.16</b>	<b>5.13</b>
Add: Depreciation	2.55	2.17	1.84	1.57	1.33



Cash Accruals	3.90	5.39	7.00	6.73	6.46
Repayment of Term loan	0.00	3.19	3.19	3.19	3.18

#### 4. WORKING CAPITAL:

	Months Consumptions	Values	%	Margin Amount	Bank Finance
Raw Materials	0.50	1.36	25%	0.34	1.02
Consumables	2.00	0.17	25%	0.04	0.13
Finished goods	0.50	2.00	25%	0.50	1.50
Debtors	0.50	2.31	10%	0.23	2.08
Expenses	1.00	0.30	100%	0.30	0.00
		6.14		1.41	4.73

#### 5. PROFITABILITY RATIOS BASED ON 80% UTILISATION

<u>Profit after Tax</u>	=	<u>5.16</u>	7%
Sales		73.92	
<u>Profit before Interest and Tax</u>	=	<u>9.17</u>	35%
Total Investment		26.14	
<u>Profit after Tax</u>	=	<u>5.16</u>	60%
Promoters Capital		8.66	

#### 6. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs. lakhs]
Wages & Salaries	6.83
Repairs & Maintenance	0.73
Depreciation	1.84
Admin. & General expenses	3.97
Interest on TL	0.88
	14.25
Profit Before Tax (P)	7.77
BEL = $\frac{FC \times 100}{FC + P}$	= $\frac{14.25}{22.02} \times \frac{80}{100} \times 100$

52% of installed capacity or production volume  
873600 metres or Sales value Rs.48.05 lacs

# **HARD RUBBER BATTERY CONTAINERS**

## **INTRODUCTION**

Automobile battery containers are used to carry the Batteries. They can be made of Natural rubber, synthetic rubber or reclaimed rubber depending up on the required hardness and strength.

## **MARKET**

Natural Rubber (NR) is produced from latex or field coagulum obtained from rubber trees planted in plantations.

The most important forms in which NR is processed and marketed are the following: Sheets, Crepes, Block rubber and Preserved Latex Concentrates. In India sheet rubber designated as RSS 1, RSS 2, RSS 3, RSS 4, RSS 5 are the most commonly produced and marketed. Block Rubber is designated in the grades of ISNR.

During 2004-05, the production of natural rubber (NR) in India was 749,665 tonnes as against 711,650 produced in 2003-04.

The performance of the rubber manufacturing sector improved significantly with the revival of the industrial sector. The rubber goods manufacturing industry in India showed a growth rate of 5.0 percent with a consumption of 7,55,405 tonnes during 2004-05 as against 719,600 tonnes during 2003-04 with 3.5% growth. The auto tyre-manufacturing sector improved its growth slightly from 7.1 percent in 2003-04 to 7.4 percent in 2004-05. The impressive growth of 2.3 percent of the non-tyre sector this year from the negative growth of 0.3 percent of the previous year attributed the overall growth to 5.0 percent.

**Table 2 CONSUMPTION OF NR AND SR**

	<b>2004-05</b>	<b>2003-04</b>	<b>Growth (%)</b>
	<b>(Tonnes)</b>		
<b>Natural Rubber</b> Auto Tyres & Tubes	406226	378185	7.4
General Rubber goods	349179	341415	2.
<b>Total NR</b>	<b>755405</b>	<b>719600</b>	<b>5.0</b>
<b>Synthetic Rubber</b>			
Auto Tyres & Tubes	131267	119367	10.0
General Rubber Goods	93383	90823	2.8
<b>Total SR</b>	<b>224650</b>	<b>210190</b>	<b>6.9</b>
<b>NR &amp;</b>			
Auto Tyres & Tubes	537493	497552	8.0
General Rubber goods	442562	432238	2.4
<b>Total NR &amp; SR</b>	<b>980055</b>	<b>929790</b>	<b>5.4</b>

Synthetic Rubber (SR) production increased to 94,209 tonnes during 2004-05 from 88,366 tonnes during the previous year (2003-04) registering a growth of 6.6 percent and the increase was mainly in polybutadiene rubber.

### **GLOBAL SCENARIO**

In 2004 the world NR production increased to 8.62 million tonnes from 7.99 million tonnes in 2003 with an increase of 7.9 per cent over the previous year. The growth in world NR output was the result of a sharp rise in Malaysian and Indonesian production. SR production in 2004 increased to 11.95 million tonnes from 11.45 million tonnes during 2003 at a growth rate of 4.4 per cent.

The world NR consumption increased by 3.8 percent to 8.25 million tonnes in 2004 from 7.95 million tonnes of 2003. In 2004, SR consumption increased to 11.69 million tonnes

from 11.36 million tonnes in 2003. The share of world SR consumption stood at 58.6 in 2004 whereas it was 58.8 per cent in 2003. China increased its share of world consumption to almost 21% in 2004 from 18.8% in 2003. In addition to China, India, Brazil, Taiwan, Indonesia, etc improved its share of rubber consumption. The current global scenario is presented in Table-5.

The International Rubber Study Group (IRSG) has projected the world consumption of NR to grow by 5.2% during 2005 and 3.6% during 2006. The global production of NR is expected to grow by 3.6% during 2005 and may increase by only 0.9% during 2006. The major producing countries may continue to show reasonably high growth rates this year and will not be sustained next year as demand and prices may be weaker.

Source: Statistics and Planning Department, Rubber Board

Since the establishment of the first rubber goods manufacturing unit in 1921, the Indian rubber industry has maintained its forward march, particularly during the post-independence period. It has achieved overall expansion through increase in the range of products manufactured, in the number of units, in technological sophistication and self-sufficiency. Besides catering to the entire domestic demand, the industry is breaking new barriers on the export front. It projects tremendous growth in the 21<sup>st</sup> century. With around 6000 unit comprising 30 large scale, 300 medium scale and around 5600 SSI/tiny sector units, manufacturing 35000 rubber products, employing 400 thousand people, including around 22000 technically qualified support personnel, with a turnover of Rs.200 billions and contributing Rs.40 billions to the National Exchequer through taxes, duties and other levies, the Indian Rubber Industry plays a core sector role in the Indian national economy. The industry has certain distinct advantages like:

An extensive plantation sector

Indigenous availability of the basic raw materials, like natural rubber, synthetic rubber, rec laim rubber, carbon black, rubber chemicals, fatty acids, rayon and nylon yarn and so on.

- A large domestic market.

- Availability of cheap labour.
- Training facility in various technical institutes.
- On-going economic reforms.
- Improved living standards of the masses.

The wide range of rubber products manufactured by the Indian rubber industry comprises all types of heavy-duty earth moving tyres. Auto tyres, tubes, automobile parts, footwear, belting, hoses, cycle tyres and tubes, cables and wires, camelback, battery boxes, latex products, pharmaceutical goods, besides moulded and extruded goods for mass consumption. The products manufactured also cover hi-tech industrial items. The important areas which the industry caters to include all the three wings of defence, civil, aviation, aeronautics, railways, agriculture, transport as also textile engineering industries, pharmaceuticals, mines, steel plants, ports, family planning programmes, hospitals, sports, practically to every conceivable field.

India's exports of rubber products, including tyres exceed Rs.2000 Crores. The range of products exported include automotive tyres and tubes, Rubber and canvas footwear, cycle tyres, pharmaceutical goods, rubber hoses, cots and aprons, belts and beltings, sheeting etc. These products are exported to over 85 countries, including USA, Germany, France, U.K., Italy, UAE, Saudi Arabia, Africa, Afghanistan, Bangladesh etc. With the saturation in rubber consumption in Western countries and the shift in consumption of rubber to the Asia Pacific region, the focal points for this decade for development will be India. The industry is expected to grow at over 8% p.a. in the coming decade. Taking into account the above prospects, the industry envisaged annual growth rate of 8% and the per capita consumption of rubber at 0.8 kg. against 14 kg. There exists tremendous scope for expansion and development in coming years provided basic raw materials, particularly natural and synthetic rubber, are made available in adequate quantity and at reasonable prices. Consumption of 1.25 million tones of rubber with per capita usage of 1.2 kgs. And exports of rubber goods worth Rs.30 billion seems possible by the year 2007

## INSTALLED CAPACITY

Product	Installed capacity per hour	No of working hours per day	Capacity per day	Capacity per annum 300 days per annum
Hard rubber battery containers				
1. Battery containers	25	8	200	60000 Nos
2. Battery covers	75	8	600	180000 Nos

## PLANT AND MACHINERY

No.	Description	Qty (Nos)	Cost (Rs.)
(i)	Production machinery, Tools & Equipments consisting of the following:	Whole plant	30,00,000
1.	Mixing Mill of size 16" × 42" with chilled Cast iron rolls, reduction gear, 60HP motor, starter & accessories	1 No.	
2.	Hydraulic press – Hot platen size 800mm × 800 mm of capacity of about 300MT with 4 day lights for moulding large size battery containers	1 No.	
3.	Hydraulic Press – Hot Platen size 700mm × 700 mm of capacity of about 200MT with 4 day lights for moulding various other sizes of battery containers.	1 No	
4.	Hydraulic Press – Hot platen size 500mm × 500mm of capacity of about 100MT with 4 day lights for moulding various battery covers	1 No	
5.	Boiler 1000Kgs/hr steam capacity with working pressure of 150 Psi, with all standard accessories (Coal fired)	1 No	

#### 6. Weighing scales:

Platform type(150 Kg)	1 No.	
Single Pan type(10Kg.)Digital type	1 No.	
(ii) Material handling equipments		50,000
(iii) Testing & Inception equipments, tools & apparatus		1,50,000
<b>Total cost of machinery &amp; equipments</b>		<b>32,00,000</b>

### MANUFACTURING PROCESS

Natural rubber, synthetic rubber and reclaimed rubber are mixed with other ingredients and chemicals in a two roll mixing mill to make the rubber compound. It is then filled into suitable moulds and cured in a steam-heated hydraulic press for about 18 to 20 minutes at a temperature of 158 deg C. After curing, the pressure is released and the containers are removed from moulds and their edges and corners are trimmed. Then these containers are suitably packed and stored prior to despatch.

### RAW MATERIALS

For-Battery conatiners	60000		
For-Battery covers	180000		
	Qty-kgs	Rate/kg	Value Rs lakhs
Reclaimed Rubber	120000	60.00	72.00
Natural rubber	15000	80.00	12.00
Synthetic Rubber	9600	120.00	11.52
Sulphur	30000	8.00	2.40
Ebonite	60000	35.00	21.00
Carbon black	5040	40.00	2.02
Fillers	84000	10.00	8.40
Hidrated lime	10800	12.00	1.30
Acceleartor	3600	120.00	4.32
Retarder	6000	120.00	7.20
Process oil	6000	25.00	1.50
Miscellaneous Chemicals like talc etc			1.20
Total			144.85
Packing materials	60000	1.00	0.60

## UTILITIES

### POWER& FUEL

Three phase-	KW	45.00
Power charges Rs. lakhs p.a		5.13
Fuel-Rs	10000 p.m	1.20
Power & fuel		6.33
For process-Litres per day		2000
For human consumption-litres/day		200

### LOCATION LAND AND BUILDING

Built up area-Sq.ft	2500
Rent p.m.-Rs per .5 per sq.ft	12500
Advance-10 months.Rs	125000

### MANPOWER

		Monthly wages	Total
Supervisor	1	8000	8000
Skilled	5	5000	25000
Unskilled	11	3000	33000
Accounts Assistant	1	4000	4000
Sales Executive	1	5000	5000
Security	2	2000	4000
sub total			79000
Add benefits		20%	15800
Total per month			94800
TOTAL PER ANNUM-Rs. lakhs			11.38



## **COST OF PRODUCTION AND PROFITABILITY**

### **Assumptions**

Installed capacity	60,000 pieces of Battery Containers and 1,80,000 pieces of Battery Covers per annum
Capacity utilisation	Year-1 -60% Year -2 -70% Year-3 onwards- 80%
Selling price	Battery containers-Rs182 per no Battery covers Rs.47.00 per no
Raw materials	As per the details given above
Packing materials	As per details given above
Power & Fuel	Rs.6.33 lakh per annum at 100%
Wages and salaries	Rs. 11.38 lakhs with increase 5% every year.
Repairs and Maintenance	Rs.0.60 lakh per annum with 10% annual increase
Depreciation	Written down value method -15 % on machinery
Selling general and administrative expenses	Rs.30000 per month with annual increase of 5%.
Interest on Term loan	11% per annum
Interest on working capital	11 % per annum
Income tax	33.66 % on profits

### **MACHINERY SUPPLIERS:**

1. M/s.Indian Expeller Works Private Ltd, A-4, Naroda Industrial Estate,  
Ahmedabad – 383 330
2. M/s. Matharu Engineering Works, Plot No.1, Unit No.4, Opp. Tatwagyan Vidyapeeth  
Ghodbunder Road, Chitalsar, Thane - 400607
3. M/s. Modern Rubber Machinery Manufacturers Pvt. Ltd, 310, Jogani Industrial Estate  
541, Senapati Bapat Marg, Dadar, Mumbai – 400 028
4. M/s. Emson Industries, 6-A, Shri Ram Industrial Estate, Kaley Marg, Bail Bazar, Kurla  
Mumbai – 400 011.

5. M/s. Modern Hydraulics, 5, Italian Building(Ground Floor), 381, Sane Gruji Marg Agripada, Near I.T.I, Mumbai – 400 011
6. M/s. Perumacheril Castings Industries, Market Landing, Kottayam – 686 001, Kerala
7. M/s. Hind Hydraulics & Engineers, E-43/1, Okhla industrial Area, Phase –II, New Delhi – 110 002
8. M/s. Micromertics Engineers (P) Ltd. 298, 4<sup>th</sup> Floor, Khaleel Shiraji Estate Fountain Plaza, Pantheon Road, Egmore, Chennai – 600 028
9. M/s.Anant Engineering Works, Bassi Road, Sirihindi (N.Rly), Punjab – 140 406
10. M/s. Santhosh Industries, A-1, Sone Udyog, Parsi Panchayat Marg, Andheri (East) Mumbai – 400 069

**(b) Steam Boilers**

1. M/s. Thermax Ltd, 610, Anna Salai, Chennai – 600 006
2. M/s. Maxima Boilers Pvt Ltd, 574/80, Mount Road, Congress Building, Teynampet, Chennai – 600 006
3. M/s. Firetech Boilers Pvt. Ltd, No.211, 2<sup>nd</sup> Cross, 38<sup>th</sup> Main, BTM Layout, 2<sup>nd</sup> Stage, Bangalore – 560 068.
4. M/s. Maxtherm, K3, Ambattur Industrial Estate, Ambattur, Chennai – 600 058
5. M/s. Southern Boilers & Equipments Pvt. Ltd, Y- 169, 1<sup>st</sup> Street, Anna Nagar , Chennai – 600 040

**(c) Weighing Machines & Balances**

1. M/s. Giri Brothers Private Ltd, P.B.No 1646, No.51, Rajaji Salai, Chennai – 600 001
2. M/s. Tamilnadu Scale Industries, 166, Broadway, Chennai – 600 108

**(d) Testing & Measuring Instruments**

1. M/s. P.B.Shah & Co, 182, Linghi Chetty Street, Chennai – 600 001
2. M/s. Blue Star Ltd, 620, Anna Salai, Chennai – 600 006
3. Madras Metallurgical Services, 5, Lalithapuram Street, Royapettah, Chennai - 600014
4. M/s. Presto Stantest Pvt. Ltd, C-117, F.F. Complex, Okhla Industrial Area, New Delhi – 110 020

5. M/s. Prolific Engineers, D-91, Sector – 2, Noida – 201 301,
6. M/s. ABS instruments Pvt. Ltd, 22, Electronics Complex, Guindy, Chennai – 600 032

**(e) All miscellaneous equipments, tools, dies, moulds, fabricated items etc can be procured from local sources.**

### **Suppliers of Raw Materials**

#### **(a) Rubber**

1. M/s. Viraj Rubbers Private Ltd, 2-A, GNT Road, Ponniannanmedu, Madhavaram Post  
Chennai – 600 110
2. M/s. Silpro Trading Co, 8, Venkataratnam Road, Teynampet, Chennai – 600 018
3. M/s. Arasu Rubber Corporation Ltd, 259, Anna Salai, Chennai – 600 006
4. M/s. R.K. polymer, 196/5, Govindappa naicken Street, Chennai – 600 001
5. M/s. AVT Rubber products Ltd, 22, Marshells Road, Egmore, Chennai – 600 008
6. M/s. Goodluck Rubber House, Apnagar, 103 Marshells Road, Egmore  
Chennai – 600 008
7. M/s. Kurian Abraham Ltd, 13/1, 423 MS Road, Parvathipuram, Nagercoil – 629 001
8. M/s. Cochin Malabar Estates and Inds Ltd, 6/117, Race Course Road,  
Coimbatore – 641 018

#### **(b) Rubber Chemicals**

1. M/s. Bayer India Ltd, 749, Anna Salai, Chennai – 600 002
2. M/s. National Organic Chemical industries Ltd, 8, Haddows Road, Chennai – 600 006
3. M/s. A.V. Thomas & Co(India) Ltd, 22, Marshalls Road, Egmore, Chennai – 600 008
4. M/s. Dujodwala Industries, 43, Armenian Street, Chennai – 600 001
5. M/s. Bharat Carbon Industries, 43, Buxipur Industrial Area, Gorakhpur – 273 001, U.P
6. M/s. Rubo-Chem Industries(P) Ltd, 403/404, Ixmi Commercial Complex  
Senapati Bapat Marg, Mumbai – 400 028
7. M/s. I.C.I India Ltd, Rubber Chemicals Division, 149, Montieth Road,  
Chennai – 600 008
8. M/s. Monsanto Chemicals of India Ltd, F-4, Third Phase, Thiru Vi ka Industrial Estate  
Chennai – 600 097

- 9.M/s. Philips Carbon Black Ltd, 22, Marshalls Road, Egmore, Chennai – 600 008  
 10. M/s. R.K.Polymer, 196/5, Govindappa Naicken Street, Chennai – 600 001  
 11. M/s. South India Rubber & Chemicals, C-4, Ram Square, No.2 Village Road  
 Nungabakkam, Chennai – 600 001  
 12. M/s. Manickavelu Corporation, Plot No. W-300, 19<sup>th</sup> Street, Sector – C  
 Anna Nagar Western Extn, Chennai – 600 101.

## FINANCIAL ASPECTS

### 1. COST OF PROJECT

	[Rs.lakhs]
Land & Building (Advance)	1.25
Plant & Machinery	32.00
Other Misc. assets	0.50
Pre-Operative expenses	2.00
Margin for WC	2.84
	<u>38.59</u>

### 2. MEANS OF FINANCE

Capital	14.59
Term Loan	24.00
	<u>38.59</u>

### 3. COST OF PRODUCTION & PROFITABILITY STATEMENT

	[Rs.lakhs]				
Years	1	2	3	4	5
Installed Capacity- Battery containers-Nos	60000	60000	60000	60000	60000
Installed capacity-Battery covers	180000	180000	180000	180000	180000
Utilisation	60%	70%	80%	80%	80%
Production/Sales-Battery containers	36000	42000	48000	48000	48000
Production/sales-Battery covers	108000	126000	144000	144000	144000
Battery containers	182.00				
Battery covers	47.00				

Sales Value (Rs.lakhs)	<b>116.28</b>	<b>135.66</b>	<b>155.04</b>	<b>155.04</b>	<b>155.04</b>
Raw Materials	86.91	101.40	115.88	115.88	115.88
Packing Materials	0.36	0.42	0.48	0.48	0.48
Power& fuel	3.80	4.43	5.06	5.06	5.06
Wages & Salaries	11.38	11.94	12.54	13.17	13.83
Repairs & Maintenance	0.60	0.66	0.73	0.80	0.88
Depreciation	4.80	4.08	3.47	2.95	2.51
Cost of Production	107.85	122.93	138.16	138.34	138.64
Selling, Admin, & General exp	3.60	3.78	3.97	4.17	4.38
Interest on Term Loan	2.64	2.31	1.65	0.99	0.33
Interest on Working Capital	1.15	1.15	1.15	1.15	1.15
<b>Total</b>	<b>115.24</b>	<b>130.17</b>	<b>144.93</b>	<b>144.65</b>	<b>144.50</b>
Profit Before Tax	1.04	5.49	10.11	10.39	10.54
Provision for tax	0.00	1.85	3.40	3.50	3.55
<b>Profit After Tax</b>	<b>1.04</b>	<b>3.64</b>	<b>6.71</b>	<b>6.89</b>	<b>6.99</b>
Add: Depreciation	4.80	4.08	3.47	2.95	2.51
Cash Accruals	5.84	7.72	10.18	9.84	9.50
Repayment of Term loan	0.00	6.00	6.00	6.00	6.00

#### 4. WORKING CAPITAL:

	Months Consumptions	Values	%	Margin Amount	Bank Finance
Raw Materials	0.50	3.62	25%	0.91	2.71
Consumables	2.00	0.06	25%	0.02	0.04
Finished goods	0.50	4.49	25%	1.12	3.37
Debtors	0.50	4.85	10%	0.49	4.36
Expenses	1.00	0.30	100%	0.30	0.00
		<b>13.32</b>		<b>2.84</b>	<b>10.48</b>

## 6. PROFITABILITY RATIOS BASED ON 80% UTILISATION

$$\frac{\text{Profit after Tax}}{\text{Sales}} = \frac{6.71}{155.04} \quad 4\%$$

$$\frac{\text{Profit before Interest and Tax}}{\text{Total Investment}} = \frac{12.91}{49.07} \quad 26\%$$

$$\frac{\text{Profit after Tax}}{\text{Promoters Capital}} = \frac{6.71}{14.59} \quad 46\%$$

## 7. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs.lakhs]
Wages & Salaries	12.54
Repairs & Maintenance	0.73
Depreciation	3.47
Admin. & General expenses	3.97
Interest on TL	1.65
	<hr/>
	22.36

Profit Before Tax (P) 10.11

$$\text{BEL} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{22.36}{32.47} \times \frac{80}{100} \times 100$$

55% of installed capacity

## **HOSPITAL & INDUSTRIAL SHEETINGS**

### **(A) INTRODUCTION**

Items like Hospital and Industrial rubber sheeting's , Oil resistant sheeting's, Chemical resistant tank linings are all manufactured by the process of calendering. Hospital sheeting's are plain sheeting's of about 0.4 mm thickness and a width of about 1 metres. The new design of hospital sheeting's with fabric insertion known as Mackintosh is gaining wide acceptance. Industrial sheeting's can also be plain or with fabric reinforcement depending on the customer's requirements.

### **(B) MARKET**

The main uses of hospital sheeting's are that they are used as bed sheets in hospitals and as baby sheets. Industrial sheeting's are widely used for the manufacture of washers, seals, which are required in large numbers. With the phenomenal growth in the industrial and health care sectors in recent times, there is an ever increasing demand for these sheeting's.

Since the establishment of the first rubber goods manufacturing unit in 1921, the Indian rubber industry has maintained its forward march, particularly during the post-independence period. It has achieved overall expansion through increase in the range of products manufactured, in the number of units, in technological sophistication and self-sufficiency. Besides catering to the entire domestic demand, the industry is breaking new barriers on the export front. It projects tremendous growth in the 21<sup>st</sup> century

With around 6000 unit comprising 30 large scale, 300 medium scale and around 5600 SSI/tiny sector units, manufacturing 35000 rubber products, employing 400 thousand people, including around 22000 technically qualified support personnel, with a turnover of Rs.200 billions and contributing Rs.40 billions to the National Exchequer through taxes, duties and other levies, the Indian Rubber Industry plays a core sector role in the Indian national economy. The industry has certain distinct advantages like:

An extensive plantation sector

Indigenous availability of the basic raw materials, like natural rubber, synthetic rubber, reclaim rubber, carbon black, rubber chemicals, fatty acids, rayon and nylon yarn and so on.

- ❖ A large domestic market.
- ❖ Availability of cheap labor.
- ❖ Training facility in various technical institutes.
- ❖ On-going economic reforms.
- ❖ Improved living standards of the masses.

The wide range of rubber products manufactured by the Indian rubber industry comprises all types of heavy duty earth moving tyres. Auto tyres, tubes, automobile parts, footwear, belting, hoses, cycle tyres and tubes, cables and wires, camelback, battery boxes, latex products, pharmaceutical goods, besides moulded and extruded goods for mass consumption. The products manufactured also cover hi-tech industrial items. The important areas which the industry caters to include all the three wings of defence, civil, aviation, aeronautics, railways, agriculture, transport as also textile engineering industries, pharmaceuticals, mines, steel plants, ports, family planning programmes, hospitals, sports, practically to every conceivable field.

India's exports of rubber products, including tyres exceed Rs.2000 Crores. The range of products exported include automotive tyres and tubes, Rubber and canvas footwear, cycle tyres, pharmaceutical goods, rubber hoses, cots and aprons, belts and beltings, sheeting etc. These products are exported to over 85 countries, including USA, Germany, France, U.K., Italy, UAE, Saudi Arabia, Africa, Afghanistan, Bangladesh etc. With the saturation in rubber consumption in Western countries and the shift in consumption of rubber to the Asia Pacific region, the focal points for this decade for development will be India. The industry is expected to grow at over 8% p.a. in the coming decade. Taking into account the above prospects, the industry envisaged annual growth rate of 8% and the per capita consumption of rubber at 0.8 kg. against 14 kg. There exists tremendous scope for expansion and development in coming years provided basic raw materials, particularly natural and synthetic rubber, are made



available in adequate quantity and at reasonable prices. Consumption of 1.25 million tones of rubber with per capita usage of 1.2 kgs. And exports of rubber goods worth Rs.30 billion seems possible by the year 2007

### INSTALLED CAPACITY

Product	Installed capacity per hour	No of working hours per day	Capacity per day	Capacity per annum 300 days per annum
Hospital & Industrial Sheeting	62.5 metres	16	1000 metres	300000 metres

### Plant & Machinery:

No.	Description	Qty (Nos.)	Cost (Rs.)
(i)	Production machinery, Tools & Equipments consisting of the following :	Whole Plant	<b>42,00,000</b>
1.	Mixing mill of size 14" x 36" with reduction gear, 40 HP motor & accessories.	2 Nos.	
2.	3-Roll calendering machine of size 14" x 42" with 40 HP motor & accessories.	1 No.	
3.	Steam Vulcaniser, 5' dia.and 15' long with trolley arrangement.	1 No.	
4.	Baby boiler 150 Kg/hr. Steam generation capacity at 150 psi,	1 No.	

	with 3 HP feed water motor.	
5.	Winding & Unwinding machine with all accessories.	1 No.
6.	Miscellaneous equipments, tools & building table etc.	
7.	Weighing scales :	
	Platform type(100 Kg.)	1 No.
	Single Pan type (10Kg.)- Digital type	1 No.
(ii)	Material handling equipments	75,000
(iii)	Testing & Inspection equipments, tools & apparatus.	2,25,000
	Total cost of machinery & equipments	<b>45,00,000</b>

## **MANUFACTURING PROCESS**

### **1. Process Outline**

The various ingredients are compounded in a mixing mill and fed in the form of a sheeting from the mixing rolls into a calendering machine. Rubber sheetings without any fabric support are made in thickness of 0.5 to 3 mm. Two or four roll calenders are used for this purpose. The sheet may be calendered onto a liner or onto a take-off belt from which it is wrapped in a liner. The sheets are then laid on a table, trimmed to size and wrapped on a drum with interleaving fabric and the assembly is cured in open steam vulcanizing chambers. Sometimes the sheets are dusted with talc powder or treated with a liquid anti-tack. Hospital sheets are 0.5 to 1mm thick and are required to have very smooth finish and texture.

For certain applications, the rubber sheeting is required to have the support of some fabric material. Insertion sheetings are made in thickness ranging from 1.5 to 5 mm. They have a sandwich construction. The reinforcement is provided by square oven light weight fabric, which is rubber coated on both sides by frictioning on a calender or by rubberising with dough on a spreading machine.

## RAW MATERIALS

For -Metres	300000		
	Qty-kgs	Rate/kg	Value Rs. Lakhs
Natural Rubber	84000	80.00	67.20
Stearic acid	1620	30.00	0.49
Zinc Oxide	4200	60.00	2.52
GPF Black	12000	40.00	4.80
China Clay/Whiting	84000	5.00	4.20
Barytes	18000	8.00	1.44
Pine tar	1620	35.00	0.57
Sulphur	1980	8.00	0.16
Titanium dioxide	2400	84.00	2.02
Anti oxidant	780	250.00	1.95
Acceleartor	1200	120.00	1.44
Aromatic oil	4200	200.00	8.40
Fabric cloth			6.00
Miscellaneous Chemicals like talc etc			2.40
			103.58
Packing materials	300000	0.50	1.50

## LOCATION LAND & BUILDING

Built up area-Sq.ft	3000
Rent p.m.-Rs per .5 per sq.ft	15000
Advance-10 months. Rs	150000

## Utilities

### Power & Fuel

Three phase-	KW	90.00
Power charges Rs.lakhs p.a		20.52
Fuel-Rs	10000p.m	1.20
Power & fuel		21.72

For process-Litres per day	2000
For human consumption-litres/day	200

### MAN POWER:

		Monthly wages	Total
Supervisor	1	8000	8000
Skilled	6	5000	30000
Unskilled	16	3000	48000
Accounts Assistant	1	4000	4000
Sales Executive	1	5000	5000
Security	1	2000	2000
sub total			97000
Add benefits		20%	19400
Total per month			116400
TOTAL PER ANNUM-Rs. lakhs			13.97

### COST OF PRODUCTION AND PROFITABILTY

#### Assumptions

Installed capacity	3,00,000 metres per annum
Capacity utilisation	Year-1 -60% Year -2 -70% Year-3 onwards- 80%
Selling price	Rs.60.00 per metres
Raw materials	As per the details given above
Packing materials	As per details given above
Power	Rs.20.52 lakhs per annum at 100%
Wages and salaries	Rs. 13.97 lakhs with increase 5% every year.
Repairs and Maintenance	Rs.0.60 lakh per annum
Depreciation	Written down value method -15 % on machinery
Selling general and administrative expenses	Rs.30000 per month

Interest on Term loan	11% per annum
Interest on working capital	11 % per annum
Income tax	33.66 % on profits

## **SUPPLIERS OF MACHINERY & EQUIPMENTS**

### **(a) Rubber Processing Machinery**

1. M/s. INDIAN EXPELLER WORKS PRIVATE LTD, A-4, Naroda Industrial Estate  
Ahmedabad - 382 330
2. M/s. MATHARU ENGINEERING WORKS, Plot No.1, Unit No.4, Opp. Tatwagyan  
Vidyapeeth, Ghodbunder Road, Chitalsar, Thane - 400 607
3. M/s. MODERN RUBBER MACHINERY MANUFACTURERS PVT. LTD,  
310, Jogani Industrial Estate, 541, Senapati Bapat Marg, Dadar, Mumbai - 400 028
4. M/s. EMSON INDUSTRIES, 6-A, Shri Ram Industrial Estate, Kaley Marg, Bail Bazar,  
Kurla, Mumbai - 400 070
5. M/s. MODERN HYDRAULICS, 5, Italian Building(Ground Floor), 381, Sane Gruji Marg  
Agripada, Near I.T.I., Mumbai - 400 011
6. M/s. PERUMACHERIL CASTING INDUSTRIES, Market landing, Kottayam - 686  
001, Kerala,
7. M/s. HIND HYDRAULICS & ENGINEERS, E-43/1, Okhla Industrial Area Phase-II  
New Delhi - 110 0020
8. M/s. MICROMERTICS ENGINEERS (P) LTD, 298, 4th Floor, Khaleel Shiraji Estate  
Fountain Plaza, Pantheon Road, Egmore, Chennai - 600 028
9. M/s. ANANT ENGINEERING WORKS, Bassi Road, Sirihind(N.Rly), Punjab - 140 406
10. M/s. SANTOSH INDUSTRIES, A-1, Sone Udyog, Parsi Panchayat Marg  
Andheri(East), Mumbai - 400 069

### **(b) Steam Boilers**

1. M/s. THERMAX LTD, 610, Anna Salai, Chennai -600 006
2. M/s. MAXIMA BOILERS PVT LTD, 574/80,Mount Road, Congress building,  
Teynampet, Chennai-600 006
3. M/s. FIRETECH BOILERS PVT.LTD, No.211, 2nd. Cross, 38th Main

BTM Layout, 2nd. Stage, Bangalore - 560 068

4. M/s. MAXTHERM, K3, Ambattur Industrial Estate, Ambattur, Chennai - 600 058
5. M/s. SOUTHERN BOILERS & EQUIPMENTS PVT.LTD, Y-169, Ist. Street  
Anna Nagar, Chennai- 600 040

**(c) Weighing Machines & Balances**

1. M/s. GIRI BROTHERS PRIVATE LTD, P.B.No. 1646, No. 51, Rajaji Salai Chennai - 600 001
2. M/s. TAMILNADU SCALE INDUSTRIES, 166, Broadway, Chennai -600 108

**(d) Testing & Measuring Instruments**

1. M/s. P.B. SHAH & CO, 182, Linghi Chetty Street, Chennai - 600 001
2. M/s. BLUE STAR LTD, 620, Anna Salai, Chennai - 600 006
3. M/s. MADRAS METALLURGICAL SERVICES, 5, Lalithapuram Street  
Royapettah, Chennai - 600 014
4. M/s. PRESTO STANTEST PVT. LTD, C-117, F.F. Complex, Okhla Industrial Area  
New Delhi - 110 020
5. M/s. PROLIFIC ENGINEERS, D-91, Sector -2, Noida -201 301,
6. M/s. A B S INSTRUMENTS PVT. LTD, 22, Electronics Complex, Guindy Chennai-600 032

**(e) All miscellaneous equipments, tools, dies, moulds, fabricated items etc. can be procured from local sources.**

**SUPPLIERS OF RAW MATERIALS**

**(a) Rubber**

1. M/s. VIRAJ RUBBERS PRIVATE LTD, 2-A, GNT Road, Ponniannanmedu  
Madhavaram Post, Chennai - 600 110
2. M/s. SILPRO TRADING CO, 8, Venkataratnam Road, Teynampet, Chennai - 600 018
3. M/s. ARASU RUBBER CORPORATION LTD, 259, Anna Salai, Chennai - 600 006
4. M/s. R.K. POLYMER, 196/5, Govindappa Naicken Street, Chennai - 600 001
5. M/s. AVT RUBBER PRODUCTS LTD, 22, Marshells Road, Egmore, Chennai-600 008
6. M/s. GOODLUCK RUBBER HOUSE, Apnagar, 103 Marshells Road, Egmore  
Chennai- 600 008

7. M/s. KURIAN ABRAHAM LTD,13/1, 423 M S Road, Parvathipuram, Nagercoil- 629 001
8. M/s. COCHIN MALABAR ESTATES, AND INDS.LTD, 6/117, Race Course Road  
Coimbatore- 641 018

**(b) Rubber Chemicals**

1. M/s. BAYER INDIA LTD, 749, Anna Salai, Chennai - 600 002
2. M/s. NATIONAL ORGANIC CHEMICAL INDUSTRIES LTD, 8, Haddows Road  
Chennai - 600 006
3. M/s. A.V. THOMAS & CO (INDIA) LTD, 22, Marshalls Road, Egmore, Chennai - 600 008
4. M/s. DUJODWALA INDUSTRIES, 43, Armenian Street, Chennai - 600 001
5. M/s. BHARAT CARBON INDUSTRIES, 43, Buxipur Industrial Area,  
Gorakhpur -273 001, U.P.
6. M/s. RUBO-CHEM INDUSTRIES(P) LTD, 403/404, Laxmi Commercial Complex  
Senapati Bapat Marg, Mumbai - 400 028
7. M/s. I.C.I. INDIA LTD, Rubber Chemicals Divn, 149, Montieth Road,Chennai - 600 008
8. M/s. MONSANTO CHEMICALS OF INDIA LTD, F-4, Third Phase, Thiru Vi Ka  
Industrial Estate, Chennai - 600 097
9. M/s. PHILIPS CARBON BLACK LTD, 22, Marshalls Road, Egmore, Chennai - 600 008
10. M/s. R.K. POLYMER, 196/5, Govindappa Naicken Street, Chennai - 600 001
11. M/s. SOUTH INDIA RUBBER & CHEMICALS, C-4, Ram Square, No.2, Village Road  
Nungambakkam, Chennai - 600 034
12. M/s. MANICKAVELU CORPORATION, Plot No. W-300, 19th Street, Sector -C  
Anna Nagar western Extn, Chennai - 600 101.

**(c) Miscellaneous Items**

All other miscellaneous items can be easily procured from the market sources

## FINANCIAL ASPECTS

### 1. COST OF PROJECT

	[Rs.lakhs]
Land & Building (Advance)	1.50
Plant & Machinery	45.00
Other Misc. assets	0.50
Pre-Operative expenses	2.00
Margin for WC	2.46
	<hr/>
	51.46
	<hr/>

### 2. MEANS OF FINANCE

Capital	17.71
Term Loan	33.75
	<hr/>
	51.46
	<hr/>

Term loan is assumed at 75% value of the machinery

### 3. COST OF PRODUCTION & PROFITABILITY STATEMENT

	[Rs.lakhs]				
Years	1	2	3	4	5
Installed Capacity-metres	300000	300000	300000	300000	300000
Utilisation	60%	70%	80%	80%	80%
Production/Sales-metres	180000	210000	240000	240000	240000
Selling Price per metre -Rs.	60.00				
Sales Value (Rs.lakhs)	<b>108.00</b>	<b>126.00</b>	<b>144.00</b>	<b>144.00</b>	<b>144.00</b>
Raw Materials	62.15	72.50	82.86	82.86	82.86
Packing Materials	0.90	1.05	1.20	1.20	1.20



Power& fuel	13.03	15.20	17.38	17.38	17.38
Wages & Salaries	13.97	14.67	15.40	16.17	16.98
Repairs & Maintenance	0.60	0.66	0.73	0.80	0.88
Depreciation	6.75	5.74	4.88	4.15	3.52
Cost of Production	97.40	109.82	122.45	122.56	122.82
Selling, Admin, & General exp	3.60	3.78	3.97	4.17	4.38
Interest on Term Loan	3.71	3.25	2.32	1.39	0.46
Interest on Working Capital	1.01	1.01	1.01	1.01	1.01
Total	105.72	117.86	129.75	129.13	128.67
Profit Before Tax	2.28	8.14	14.25	14.87	15.33
Provision for tax	0.00	2.74	4.80	5.01	5.16
Profit After Tax	<b>2.28</b>	<b>5.40</b>	<b>9.45</b>	<b>9.86</b>	<b>10.17</b>
Add: Depreciation	6.75	5.74	4.88	4.15	3.52
Cash Accruals	9.03	11.14	14.33	14.01	13.69
Repayment of Term loan	0.00	8.44	8.44	8.44	8.43

#### 4. WORKING CAPITAL:

	Months	Values	%	Margin	Bank
	Consumptions			Amount	Finance
Raw Materials	0.50	2.59	25%	0.65	1.94
Consumables	2.00	0.15	25%	0.04	0.11
Finished goods	0.50	4.06	25%	1.02	3.04
Debtors	0.50	4.50	10%	0.45	4.05
Expenses	1.00	0.30	100%	0.30	0.00
		11.60		2.46	9.14

## 6. PROFITABILITY RATIOS BASED ON 80% UTILISATION

$$\frac{\text{Profit after Tax}}{\text{Sales}} = \frac{9.45}{144.00} \quad 7\%$$

$$\frac{\text{Profit before Interest and Tax}}{\text{Total Investment}} = \frac{17.58}{60.60} \quad 29\%$$

$$\frac{\text{Profit after Tax}}{\text{Promoters Capital}} = \frac{9.45}{17.71} \quad 53\%$$

## 7. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs.lakhs]
Wages & Salaries	15.40
Repairs & Maintenance	0.73
Depreciation	4.88
Admin. & General expenses	3.97
Interest on TL	2.32
	27.30

Profit Before Tax (P) 14.25

$$\text{BEL} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{27.30}{41.55} \times \frac{80}{100} \times 100$$

53% of installed capacity

## **HOSPITAL & INDUSTRIAL SHEETINGS**

### **(A) INTRODUCTION**

Items like Hospital and Industrial rubber sheeting's , Oil resistant sheeting's, Chemical resistant tank linings are all manufactured by the process of calendering. Hospital sheeting's are plain sheeting's of about 0.4 mm thickness and a width of about 1 metres. The new design of hospital sheeting's with fabric insertion known as Mackintosh is gaining wide acceptance. Industrial sheeting's can also be plain or with fabric reinforcement depending on the customer's requirements.

### **(B) MARKET**

The main uses of hospital sheeting's are that they are used as bed sheets in hospitals and as baby sheets. Industrial sheeting's are widely used for the manufacture of washers, seals, which are required in large numbers. With the phenomenal growth in the industrial and health care sectors in recent times, there is an ever increasing demand for these sheeting's.

Since the establishment of the first rubber goods manufacturing unit in 1921, the Indian rubber industry has maintained its forward march, particularly during the post-independence period. It has achieved overall expansion through increase in the range of products manufactured, in the number of units, in technological sophistication and self-sufficiency. Besides catering to the entire domestic demand, the industry is breaking new barriers on the export front. It projects tremendous growth in the 21<sup>st</sup> century

With around 6000 unit comprising 30 large scale, 300 medium scale and around 5600 SSI/tiny sector units, manufacturing 35000 rubber products, employing 400 thousand people, including around 22000 technically qualified support personnel, with a turnover of Rs.200 billions and contributing Rs.40 billions to the National Exchequer through taxes, duties and other levies, the Indian Rubber Industry plays a core sector role in the Indian national economy. The industry has certain distinct advantages like:

An extensive plantation sector

Indigenous availability of the basic raw materials, like natural rubber, synthetic rubber, reclaim rubber, carbon black, rubber chemicals, fatty acids, rayon and nylon yarn and so on.

- ❖ A large domestic market.
- ❖ Availability of cheap labor.
- ❖ Training facility in various technical institutes.
- ❖ On-going economic reforms.
- ❖ Improved living standards of the masses.

The wide range of rubber products manufactured by the Indian rubber industry comprises all types of heavy duty earth moving tyres. Auto tyres, tubes, automobile parts, footwear, belting, hoses, cycle tyres and tubes, cables and wires, camelback, battery boxes, latex products, pharmaceutical goods, besides moulded and extruded goods for mass consumption. The products manufactured also cover hi-tech industrial items. The important areas which the industry caters to include all the three wings of defence, civil, aviation, aeronautics, railways, agriculture, transport as also textile engineering industries, pharmaceuticals, mines, steel plants, ports, family planning programmes, hospitals, sports, practically to every conceivable field.

India's exports of rubber products, including tyres exceed Rs.2000 Crores. The range of products exported include automotive tyres and tubes, Rubber and canvas footwear, cycle tyres, pharmaceutical goods, rubber hoses, cots and aprons, belts and beltings, sheeting etc. These products are exported to over 85 countries, including USA, Germany, France, U.K., Italy, UAE, Saudi Arabia, Africa, Afghanistan, Bangladesh etc. With the saturation in rubber consumption in Western countries and the shift in consumption of rubber to the Asia Pacific region, the focal points for this decade for development will be India. The industry is expected to grow at over 8% p.a. in the coming decade. Taking into account the above prospects, the industry envisaged annual growth rate of 8% and the per capita consumption of rubber at 0.8 kg. against 14 kg. There exists tremendous scope for expansion and development in coming years provided basic raw materials, particularly natural and synthetic rubber, are made

available in adequate quantity and at reasonable prices. Consumption of 1.25 million tones of rubber with per capita usage of 1.2 kgs. And exports of rubber goods worth Rs.30 billion seems possible by the year 2007

### INSTALLED CAPACITY

Product	Installed capacity per hour	No of working hours per day	Capacity per day	Capacity per annum 300 days per annum
Hospital & Industrial Sheeting	62.5 metres	16	1000 metres	300000 metres

### Plant & Machinery:

No.	Description	Qty (Nos.)	Cost (Rs.)
(i)	Production machinery, Tools & Equipments consisting of the following :	Whole Plant	<b>42,00,000</b>
1.	Mixing mill of size 14" x 36" with reduction gear, 40 HP motor & accessories.	2 Nos.	
2.	3-Roll calendering machine of size 14" x 42" with 40 HP motor & accessories.	1 No.	
3.	Steam Vulcaniser, 5' dia.and 15' long with trolley arrangement.	1 No.	
4.	Baby boiler 150 Kg/hr. Steam generation capacity at 150 psi,	1 No.	

	with 3 HP feed water motor.	
5.	Winding & Unwinding machine with all accessories.	1 No.
6.	Miscellaneous equipments, tools & building table etc.	
7.	Weighing scales :	
	Platform type(100 Kg.)	1 No.
	Single Pan type (10Kg.)- Digital type	1 No.
(ii)	Material handling equipments	75,000
(iii)	Testing & Inspection equipments, tools & apparatus.	2,25,000
	Total cost of machinery & equipments	<b>45,00,000</b>

## **MANUFACTURING PROCESS**

### **1. Process Outline**

The various ingredients are compounded in a mixing mill and fed in the form of a sheeting from the mixing rolls into a calendering machine. Rubber sheetings without any fabric support are made in thickness of 0.5 to 3 mm. Two or four roll calenders are used for this purpose. The sheet may be calendered onto a liner or onto a take-off belt from which it is wrapped in a liner. The sheets are then laid on a table, trimmed to size and wrapped on a drum with interleaving fabric and the assembly is cured in open steam vulcanizing chambers. Sometimes the sheets are dusted with talc powder or treated with a liquid anti-tack. Hospital sheets are 0.5 to 1mm thick and are required to have very smooth finish and texture.

For certain applications, the rubber sheeting is required to have the support of some fabric material. Insertion sheetings are made in thickness ranging from 1.5 to 5 mm. They have a sandwich construction. The reinforcement is provided by square oven light weight fabric, which is rubber coated on both sides by frictioning on a calender or by rubberising with dough on a spreading machine.

## RAW MATERIALS

For -Metres	300000		
	Qty-kgs	Rate/kg	Value Rs. Lakhs
Natural Rubber	84000	80.00	67.20
Stearic acid	1620	30.00	0.49
Zinc Oxide	4200	60.00	2.52
GPF Black	12000	40.00	4.80
China Clay/Whiting	84000	5.00	4.20
Barytes	18000	8.00	1.44
Pine tar	1620	35.00	0.57
Sulphur	1980	8.00	0.16
Titanium dioxide	2400	84.00	2.02
Anti oxidant	780	250.00	1.95
Acceleartor	1200	120.00	1.44
Aromatic oil	4200	200.00	8.40
Fabric cloth			6.00
Miscellaneous Chemicals like talc etc			2.40
			103.58
Packing materials	300000	0.50	1.50

## LOCATION LAND & BUILDING

Built up area-Sq.ft	3000
Rent p.m.-Rs per .5 per sq.ft	15000
Advance-10 months. Rs	150000

## Utilities

### Power & Fuel

Three phase-	KW	90.00
Power charges Rs.lakhs p.a		20.52
Fuel-Rs	10000p.m	1.20
Power & fuel		21.72

For process-Litres per day	2000
For human consumption-litres/day	200

### MAN POWER:

		Monthly wages	Total
Supervisor	1	8000	8000
Skilled	6	5000	30000
Unskilled	16	3000	48000
Accounts Assistant	1	4000	4000
Sales Executive	1	5000	5000
Security	1	2000	2000
sub total			97000
Add benefits		20%	19400
Total per month			116400
TOTAL PER ANNUM-Rs. lakhs			13.97

### COST OF PRODUCTION AND PROFITABILTY

#### Assumptions

Installed capacity	3,00,000 metres per annum
Capacity utilisation	Year-1 -60% Year -2 -70% Year-3 onwards- 80%
Selling price	Rs.60.00 per metres
Raw materials	As per the details given above
Packing materials	As per details given above
Power	Rs.20.52 lakhs per annum at 100%
Wages and salaries	Rs. 13.97 lakhs with increase 5% every year.
Repairs and Maintenance	Rs.0.60 lakh per annum
Depreciation	Written down value method -15 % on machinery
Selling general and administrative expenses	Rs.30000 per month



Interest on Term loan	11% per annum
Interest on working capital	11 % per annum
Income tax	33.66 % on profits

## **SUPPLIERS OF MACHINERY & EQUIPMENTS**

### **(a) Rubber Processing Machinery**

1. M/s. INDIAN EXPELLER WORKS PRIVATE LTD, A-4, Naroda Industrial Estate  
Ahmedabad - 382 330
2. M/s. MATHARU ENGINEERING WORKS, Plot No.1, Unit No.4, Opp. Tatwagyan  
Vidyapeeth, Ghodbunder Road, Chitalsar, Thane - 400 607
3. M/s. MODERN RUBBER MACHINERY MANUFACTURERS PVT. LTD,  
310, Jogani Industrial Estate, 541, Senapati Bapat Marg, Dadar, Mumbai - 400 028
4. M/s. EMSON INDUSTRIES, 6-A, Shri Ram Industrial Estate, Kaley Marg, Bail Bazar,  
Kurla, Mumbai - 400 070
5. M/s. MODERN HYDRAULICS, 5, Italian Building(Ground Floor), 381, Sane Gruji Marg  
Agripada, Near I.T.I., Mumbai - 400 011
6. M/s. PERUMACHERIL CASTING INDUSTRIES, Market landing, Kottayam - 686  
001, Kerala,
7. M/s. HIND HYDRAULICS & ENGINEERS, E-43/1, Okhla Industrial Area Phase-II  
New Delhi - 110 0020
8. M/s. MICROMERTICS ENGINEERS (P) LTD, 298, 4th Floor, Khaleel Shiraji Estate  
Fountain Plaza, Pantheon Road, Egmore, Chennai - 600 028
9. M/s. ANANT ENGINEERING WORKS, Bassi Road, Sirihind(N.Rly), Punjab - 140 406
10. M/s. SANTOSH INDUSTRIES, A-1, Sone Udyog, Parsi Panchayat Marg  
Andheri(East), Mumbai - 400 069

### **(b) Steam Boilers**

1. M/s. THERMAX LTD, 610, Anna Salai, Chennai -600 006
2. M/s. MAXIMA BOILERS PVT LTD, 574/80,Mount Road, Congress building,  
Teynampet, Chennai-600 006
3. M/s. FIRETECH BOILERS PVT.LTD, No.211, 2nd. Cross, 38th Main

BTM Layout, 2nd. Stage, Bangalore - 560 068

4. M/s. MAXTHERM, K3, Ambattur Industrial Estate, Ambattur, Chennai - 600 058
5. M/s. SOUTHERN BOILERS & EQUIPMENTS PVT.LTD, Y-169, Ist. Street  
Anna Nagar, Chennai- 600 040

**(c) Weighing Machines & Balances**

1. M/s. GIRI BROTHERS PRIVATE LTD, P.B.No. 1646, No. 51, Rajaji Salai Chennai - 600 001
2. M/s. TAMILNADU SCALE INDUSTRIES, 166, Broadway, Chennai -600 108

**(d) Testing & Measuring Instruments**

1. M/s. P.B. SHAH & CO, 182, Linghi Chetty Street, Chennai - 600 001
2. M/s. BLUE STAR LTD, 620, Anna Salai, Chennai - 600 006
3. M/s. MADRAS METALLURGICAL SERVICES, 5, Lalithapuram Street  
Royapettah, Chennai - 600 014
4. M/s. PRESTO STANTEST PVT. LTD, C-117, F.F. Complex, Okhla Industrial Area  
New Delhi - 110 020
5. M/s. PROLIFIC ENGINEERS, D-91, Sector -2, Noida -201 301,
6. M/s. A B S INSTRUMENTS PVT. LTD, 22, Electronics Complex, Guindy Chennai-600 032

**(e) All miscellaneous equipments, tools, dies, moulds, fabricated items etc. can be procured from local sources.**

**SUPPLIERS OF RAW MATERIALS**

**(a) Rubber**

1. M/s. VIRAJ RUBBERS PRIVATE LTD, 2-A, GNT Road, Ponniannanmedu  
Madhavaram Post, Chennai - 600 110
2. M/s. SILPRO TRADING CO, 8, Venkataratnam Road, Teynampet, Chennai - 600 018
3. M/s. ARASU RUBBER CORPORATION LTD, 259, Anna Salai, Chennai - 600 006
4. M/s. R.K. POLYMER, 196/5, Govindappa Naicken Street, Chennai - 600 001
5. M/s. AVT RUBBER PRODUCTS LTD, 22, Marshells Road, Egmore, Chennai-600 008
6. M/s. GOODLUCK RUBBER HOUSE, Apnagar, 103 Marshells Road, Egmore  
Chennai- 600 008

7. M/s. KURIAN ABRAHAM LTD,13/1, 423 M S Road, Parvathipuram, Nagercoil- 629 001
8. M/s. COCHIN MALABAR ESTATES, AND INDS.LTD, 6/117, Race Course Road  
Coimbatore- 641 018

**(b) Rubber Chemicals**

1. M/s. BAYER INDIA LTD, 749, Anna Salai, Chennai - 600 002
2. M/s. NATIONAL ORGANIC CHEMICAL INDUSTRIES LTD, 8, Haddows Road  
Chennai - 600 006
3. M/s. A.V. THOMAS & CO (INDIA) LTD, 22, Marshalls Road, Egmore, Chennai - 600 008
4. M/s. DUJODWALA INDUSTRIES, 43, Armenian Street, Chennai - 600 001
5. M/s. BHARAT CARBON INDUSTRIES, 43, Buxipur Industrial Area,  
Gorakhpur -273 001, U.P.
6. M/s. RUBO-CHEM INDUSTRIES(P) LTD, 403/404, Laxmi Commercial Complex  
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11. M/s. SOUTH INDIA RUBBER & CHEMICALS, C-4, Ram Square, No.2, Village Road  
Nungambakkam, Chennai - 600 034
12. M/s. MANICKAVELU CORPORATION, Plot No. W-300, 19th Street, Sector -C  
Anna Nagar western Extn, Chennai - 600 101.

**(c) Miscellaneous Items**

All other miscellaneous items can be easily procured from the market sources

## FINANCIAL ASPECTS

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	[Rs.lakhs]
Land & Building (Advance)	1.50
Plant & Machinery	45.00
Other Misc. assets	0.50
Pre-Operative expenses	2.00
Margin for WC	2.46
	<hr/>
	51.46
	<hr/>

### 2. MEANS OF FINANCE

Capital	17.71
Term Loan	33.75
	<hr/>
	51.46
	<hr/>

Term loan is assumed at 75% value of the machinery

### 3. COST OF PRODUCTION & PROFITABILITY STATEMENT

	[Rs.lakhs]				
Years	1	2	3	4	5
Installed Capacity-metres	300000	300000	300000	300000	300000
Utilisation	60%	70%	80%	80%	80%
Production/Sales-metres	180000	210000	240000	240000	240000
Selling Price per metre -Rs.	60.00				
Sales Value (Rs.lakhs)	<b>108.00</b>	<b>126.00</b>	<b>144.00</b>	<b>144.00</b>	<b>144.00</b>
Raw Materials	62.15	72.50	82.86	82.86	82.86
Packing Materials	0.90	1.05	1.20	1.20	1.20

Power& fuel	13.03	15.20	17.38	17.38	17.38
Wages & Salaries	13.97	14.67	15.40	16.17	16.98
Repairs & Maintenance	0.60	0.66	0.73	0.80	0.88
Depreciation	6.75	5.74	4.88	4.15	3.52
Cost of Production	97.40	109.82	122.45	122.56	122.82
Selling, Admin, & General exp	3.60	3.78	3.97	4.17	4.38
Interest on Term Loan	3.71	3.25	2.32	1.39	0.46
Interest on Working Capital	1.01	1.01	1.01	1.01	1.01
Total	105.72	117.86	129.75	129.13	128.67
Profit Before Tax	2.28	8.14	14.25	14.87	15.33
Provision for tax	0.00	2.74	4.80	5.01	5.16
Profit After Tax	<b>2.28</b>	<b>5.40</b>	<b>9.45</b>	<b>9.86</b>	<b>10.17</b>
Add: Depreciation	6.75	5.74	4.88	4.15	3.52
Cash Accruals	9.03	11.14	14.33	14.01	13.69
Repayment of Term loan	0.00	8.44	8.44	8.44	8.43

#### 4. WORKING CAPITAL:

	Months Consumptions	Values	%	Margin Amount	Bank Finance
Raw Materials	0.50	2.59	25%	0.65	1.94
Consumables	2.00	0.15	25%	0.04	0.11
Finished goods	0.50	4.06	25%	1.02	3.04
Debtors	0.50	4.50	10%	0.45	4.05
Expenses	1.00	0.30	100%	0.30	0.00
		11.60		2.46	9.14

## 6. PROFITABILITY RATIOS BASED ON 80% UTILISATION

$$\frac{\text{Profit after Tax}}{\text{Sales}} = \frac{9.45}{144.00} \quad 7\%$$

$$\frac{\text{Profit before Interest and Tax}}{\text{Total Investment}} = \frac{17.58}{60.60} \quad 29\%$$

$$\frac{\text{Profit after Tax}}{\text{Promoters Capital}} = \frac{9.45}{17.71} \quad 53\%$$

## 7. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs.lakhs]
Wages & Salaries	15.40
Repairs & Maintenance	0.73
Depreciation	4.88
Admin. & General expenses	3.97
Interest on TL	2.32
	<hr/>
	27.30
	<hr/>

Profit Before Tax (P) 14.25

$$\text{BEL} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{27.30}{41.55} \times \frac{80}{100} \times 100$$

53% of installed capacity

# LATEX GLOVES

## INTRODUCTION

Rubber latex gloves are being used for medical examination and other uses. They are manufactured by dipping process. The function of these gloves in general is to protect the hand and fingers from heat, abrasion, electric shocks, chemical attack, contamination through direct contact as in case of medical examination gloves etc.

## MARKET DEMAND

The demand for industrial and household rubber gloves is rapidly increasing on account of rapid industrialization and urbanization of our country currently taking place. Several workers in the chemical, electrical and food processing industries use rubber gloves. Similarly, the number of people using gloves for household purposes during handling of detergents, floor polishes, pesticides and the like is also increasing especially in the urban areas. In view of all this, there is a good scope to start many small scale units to manufacture these gloves.

## INSTALLED CAPACITY

Product	Installed capacity per hour	No of working hours per day	Capacity per day	Capacity per annum 300 days per annum
Latex Gloves	150 Paris	8	1200 Pairs	360000 Pairs

## PLANT AND MACHINERY

S.no	Items	Qty	Rs. lakhs
1.	Production machinery, Tools & Equipments consisting of the following: Ball mill with porcelain pots (6 nos) with 3 HP motor	1	

	1. Deammonising tank of 100 litres capacity With Stirrer arrangement with motor of 0.5 HP . 2. Compounding tanks of 100 Litres capacity (Coagulant & pre-vulcanizing vats)with Covers 3. Dipping vats of 100 litres capacity(Coagulant & Pre-vulcanizing vats) with covers 4. Hot air oven of size 5" × 3" × 4" electrically. heated, with thermostatic control 6. Formers for gloves Other fixtures 7. Weighing scales: Platform type(100 Kg) Single Pan type(10Kg.)Digital type 8. Miscellaneous Equipments  (ii) Material handling equipments (iii) Testing & Inspection equipments, tools & apparatus	2  2  1 75 pairs  1 1	
	<b>Total</b>		<b>10.00</b>

## MANUFACTURING PROCESS

The manufacturing process consists of compounding creamed or centrifuged latex concentrate with necessary chemicals and dipping suitable formers into the compounded and matured latex. A thin film of rubber will be deposited on the formers. The operation of dipping is repeated till sufficient deposit of rubber is formed on the formers. The rubber deposit is dried at 70 deg C and then vulcanized at 12-deg c. This is then stripped off from the former and inspected. Finished rubber gloves are then packed and sent for storage and dispatch.



## RAW MATERIALS

For -Nos of pairs	360000		
	Qty-kgs	Rate/kg	Value Rs. Lakhs
Centrifuged latex-60% DRC	2000	60.00	1.20
Potassium Hydroxide	240	40.00	0.10
China clay	2000	5.00	0.10
Sulphur	720	8.00	0.06
ZDC	720	130.00	0.94
Zinc oxide	240	60.00	0.14
Vulkanox SP	480	115.00	0.55
Vegetable oil	120	40.00	0.05
Dispersing agent	480	120.00	0.58
Formic acid	480	35.00	0.17
Talc	480	9.00	0.04
Titanium Dioxide	480	84.00	0.40
Stabilizer	120	160.00	0.19
			4.52
Packing materials	360000	0.50	1.80

## LAND AND BUILDINGS

Built up area-Sq.ft	2000
Rent p.m.-Rs per .5 per sq.ft	10000
Advance-10 months. Rs	100000

## UTILITIES

### POWER

Three phase-	KW	25.00
Power charges Rs. lakhs p.a		2.85
Fuel-Rs	10000p.m	1.20
Power & fuel		4.05
For process-Litres per day		2000
For human consumption-litres/day		200

## MANPOWER

		Monthly wages	Total
Supervisor	1	8000	8000
Skilled	1	5000	5000
Unskilled	2	3000	6000
Accounts Assistant	1	4000	4000
Security	1	2000	2000
sub total			25000
Add benefits		20%	5000
Total per month			30000
TOTAL PER ANNUM-Rs. lakhs			3.60

## SCHEDULE OF IMPLEMENTATION

After the funding arrangements are made and the premises are kept ready the project implementation will take about 3 months period.

## COST OF PRODUCTION AND PROFITABILITY

### Assumptions

Installed capacity	360000 pairs of Latex gloves r annum
Capacity utilisation	Year-1 -60% Year -2 -70% Year-3 onwards- 80%
Selling price	Rs.7.00 per pair.
Raw materials	As per the details given above
Packing materials	As per details given above
Power & Fuel	Rs.4.05 lakhs per annum at 100%
Wages and salaries	Rs. 3.60 lakhs with increase 5% every year.
Repairs and Maintenance	Rs.0.60 lakh per annum with 10% annual increase
Depreciation	Written down value method -15 % on machinery
Selling general and	Rs.20000 per month with 5% annual increase

administrative expenses	
Interest on Term loan	11% per annum
Interest on working capital	11 % per annum
Income tax	33.66 % on profits

**MACHINERY SUPPLIERS:**

1. M/s.Indian Expeller Works Private Ltd, A-4, Naroda Industrial Estate, Ahmedabad – 383 330
2. M/s. Matharu Engineering Works, Plot No.1, Unit No.4, Opp. Tatwagyan Vidyapeeth  
Ghodbunder Road, Chitalsar, Thane - 400607
3. M/s. Modern Rubber Machinery Manufacturers Pvt. Ltd, 310, Jogani Industrial Estate, 541, Senapati Bapat Marg, Dadar, Mumbai – 400 028
4. M/s. Emson Industries, 6-A, Shri Ram Industrial Estate, Kaley Marg, Bail Bazar, Kurla, Mumbai – 400 011
5. M/s. Modern Hydraulics, 5, Italian Building(Ground Floor), 381, Sane Gruji Marg, Agripada, Near I.T.I, Mumbai – 400 011
6. M/s. Perumacheril Castings Industries, Market Landing, Kottayam – 686 001, Kerala
7. M/s. Hind Hydraulics & Engineers, E-43/1, Okhla industrial Area, Phase –II  
New Delhi – 110 002
8. M/s. Micromertics Engineers (P) Ltd, 298, 4<sup>th</sup> Floor, Khaleel Shiraji Estate  
Fountain Plaza, Pantheon Road, Egmore, Chennai – 600 028
9. M/s.Anant Engineering Works, Bassi Road, Sirihindi (N.Rly), Punjab – 140 406
10. M/s. Santhosh Industries, A-1, Sone Udyog, Parsi Panchayat Marg,  
Andheri (East), Mumbai – 400 069

### **(b) Steam Boilers**

1. M/s. Thermax Ltd, 610, Anna Salai, Chennai – 600 006
2. M/s. Maxima Boilers Pvt Ltd, 574/80, Mount Road, Congress Building,  
Teynampet, Chennai – 600 006
3. M/s. Firetech Boilers Pvt. Ltd, No.211, 2<sup>nd</sup> Cross, 38<sup>th</sup> Main, BTM Layout, 2<sup>nd</sup>  
Stage, Bangalore – 560 068
4. M/s. Maxtherm, K3, Ambattur Industrial Estate, Ambattur, Chennai – 600 058
5. M/s. Southern Boilers & Equipments Pvt. Ltd, Y- 169, 1<sup>st</sup> Street, Anna Nagar ,  
Chennai – 600 040

### **(c) Weighing Machines & Balances**

1. M/s. Giri Brothers Private Ltd, P.B.No 1646, No.51, Rajaji Salai, Chennai–600 001
2. M/s. Tamilnadu Scale Industries,166, Broadway, Chennai – 600 108

### **(d) Testing & Measuring Instruments**

1. M/s. P.B.Shah & Co, 182, Linghi Chetty Street, Chennai – 600 001
2. M/s. Blue Star Ltd, 620, Anna Salai, Chennai – 600 006
3. Madras Metallurgical Services, 5, Lalithapuram Street, Royapettah, Chennai-600014
4. M/s. Presto Stantest Pvt. Ltd, C-117, F.F. Complex, Okhla Industrial Area  
New Delhi – 110 020
5. M/s. Prolific Engineers, D-91, Sector – 2, Noida – 201 301
6. M/s. ABS instruments Pvt. Ltd, 22, Electronics Complex, Guindy, Chennai–600 032

## **Suppliers of Raw Materials**

### **(a) Rubber**

1. M/s. Viraj Rubbers Private Ltd, 2-A, GNT Road, Ponniannanmedu,  
Madhavaram Post, Chennai – 600 110
2. M/s. Silpro Trading Co, 8, Venkataratnam Road, Teynampet, Chennai–600 018
3. M/s.Arasu Rubber Corporation Ltd, 259, Anna Salai, Chennai – 600 006
4. M/s. R.K.polymer,196/5, Govindappa naicken Street, Chennai – 600 001
5. M/s. AVT Rubber products Ltd, 22, Marshells Road, Egmore, Chennai–600 008
6. M/s. Goodluck Rubber House, Apnagar, 103 Marshells Road, Egmore,  
Chennai – 600 008
7. M/s. Kurian Abraham Ltd, 13/1, 423 MS Road, Parvathipuram, Nagercoil–629 001
8. M/s. Cochin Malabar Estates and Inds Ltd, 6/117, Race Course Road  
Coimbatore – 641 018

### **(b) Rubber Chemicals**

1. M/s. Bayer India Ltd, 749, Anna Salai, Chennai – 600 002
2. M/s. National Organic Chemical industries Ltd, 8, Haddows Road, Chennai–600 006
3. M/s. A.V.Thomas & Co(India) Ltd, 22, Marshalls Road, Egmore, Chennai–600 008
4. M/s. Dujodwala Industries, 43, Armenian Street, Chennai – 600 001
5. M/s. Bharat Carbon Industries, 43 Buxipur Industrial Area, Gorakhpur–273 001, U.P
6. M/s.Rubo-Chem Industries(P) Ltd, 403/404, laxmi Commercial Complex  
Senapati Bapat Marg, Mumbai – 400 028
7. M/s. I.C.I India Ltd, Rubber Chemicals Division, 149 Montieth Road, Chennai–600 008

8. M/s. Monsanto Chemicals of India Ltd, F-4, Third Phase, Thiru Vi ka Industrial Estate, Chennai – 600 097
9. M/s. Philips Carbon Black Ltd, 22, Marshalls Road, Egmore, Chennai–600 008
10. M/s. R.K.Polymer,196/5, Govindappa Naicken Street, Chennai – 600 001
11. M/s. South India Rubber & Chemicals, C-4, Ram Square, No.2 Village Road Nungabakkam, Chennai – 600 001
12. M/s. Manickavelu Corporation, Plot No. W-300, 19<sup>th</sup> Street, Sector – C Anna Nagar Western Extn. Chennai – 600 101

## **FINANCIAL ASPECTS**

### **1. COST OF PROJECT**

	[Rs.lakhs]
Land & Building (Advance)	1.00
Plant & Machinery	10.00
Other Misc. assets	0.50
Pre-Operative expenses	2.00
Margin for WC	0.57
	14.07
	14.07

### **2. MEANS OF FINANCE**

Capital	6.57
Term Loan	7.50
	14.07
	14.07

Term Loan amount is assumed at 75% value of the Machinery.

### 3. COST OF PRODUCTION & PROFITABILITY STATEMENT

Years	[Rs. lakhs]				
	1	2	3	4	5
Installed Capacity-No of Pairs	360000	360000	360000	360000	360000
Utilisation	60%	70%	80%	80%	80%
Production/Sales-No of pairs	216000	252000	288000	288000	288000
Selling Price per pair -Rs.	7.00				
Sales Value (Rs. lakhs)	<b>15.12</b>	<b>17.64</b>	<b>20.16</b>	<b>20.16</b>	<b>20.16</b>
Raw Materials	2.71	3.16	3.61	3.61	3.61
Packing Materials	1.08	1.26	1.44	1.44	1.44
Power& fuel	2.43	2.84	3.24	3.24	3.24
Wages & Salaries	3.60	3.78	3.97	4.17	4.38
Repairs & Maintenance	0.60	0.66	0.73	0.80	0.88
Depreciation	1.50	1.28	1.08	0.92	0.78
Cost of Production	11.92	12.98	14.07	14.18	14.33
Selling, Admin, & General exp	2.40	2.52	2.65	2.78	2.92
Interest on Term Loan	0.83	0.72	0.51	0.31	0.10
Interest on Working Capital	0.13	0.13	0.13	0.13	0.13
Total	15.28	16.35	17.36	17.40	17.48
Profit Before Tax	-0.16	1.30	2.80	2.76	2.68
Provision for tax	-0.05	0.44	0.94	0.93	0.90
Profit After Tax	<b>-0.11</b>	<b>0.86</b>	<b>1.86</b>	<b>1.83</b>	<b>1.78</b>
Add: Depreciation	1.50	1.28	1.08	0.92	0.78
Cash Accruals	1.39	2.13	2.94	2.75	2.56
Repayment of Term loan	0.00	1.88	1.88	1.88	1.86

#### 4. WORKING CAPITAL:

	Months Consumptions	Values	%	Margin Amount	Bank Finance
Raw Materials	0.50	0.11	25%	0.03	0.08
Consumables	2.00	0.18	25%	0.05	0.13
Finished goods	0.50	0.50	25%	0.13	0.37
Debtors	0.50	0.63	10%	0.06	0.57
Expenses	1.00	0.20	100%	0.20	0.00
		1.92		0.47	1.15

#### 5. PROFITABILITY RATIOS BASED ON 80% UTILISATION

<u>Profit after Tax</u>	=	<u>1.86</u>	9%
Sales		20.16	
<u>Profit before Interest and Tax</u>	=	<u>3.44</u>	23%
Total Investment		15.22	
<u>Profit after Tax</u>	=	<u>1.86</u>	28%
Promoters Capital		6.57	

#### 6. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs. lakhs]
Wages & Salaries	3.97
Repairs & Maintenance	0.73
Depreciation	1.08
Admin. & General expenses	2.65
Interest on TL	0.51
	<u>8.94</u>
Profit Before Tax (P)	<u>2.80</u>

$$\text{BEL} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{8.94}{11.74} \times \frac{80}{100} \times 100$$

61% of installed capacity or Production  
volume 219600 pairs or Sales value  
Rs.15.37 lacs





## **MICROCELLULAR RUBBER SHEETS**

### **(A) INTRODUCTION**

The use of microcellular soles is becoming very popular because of its wear and tear resistance properties. The units manufacturing these can be ancillary to some large scale footwear manufacturing unit. Though the large scale units do manufacture microcellular sheet, their production usually falls short of their requirements thereby necessitating purchases from outside sources.

### **(B) MARKET**

The demand for micro cellular sheets has been steadily increasing and some of the units producing the sheets are working additional shifts to meet the demand. It has also got good export possibilities, especially to the Middle East and West African Countries.

Since the establishment of the first rubber goods manufacturing unit in 1921, the Indian rubber industry has maintained its forward march, particularly during the post-independence period. It has achieved overall expansion through increase in the range of products manufactured, in the number of units, in technological sophistication and self-sufficiency. Besides catering to the entire domestic demand, the industry is breaking new barriers on the export front. It projects tremendous growth in the 21<sup>st</sup> century

With around 6000 unit comprising 30 large scale, 300 medium scale and around 5600 SSI/tiny sector units, manufacturing 35000 rubber products, employing 400 thousand people, including around 22000 technically qualified support personnel, with a turnover of Rs.200 billions and contributing Rs.40 billions to the National Exchequer through taxes, duties and other levies, the Indian Rubber Industry plays a core sector role in the Indian national economy. The industry has certain distinct advantages like:

- ❖ An extensive plantation sector
- ❖ Indigenous availability of the basic raw materials, like natural rubber, synthetic rubber,
- ❖ reclaim rubber, carbon black, rubber chemicals, fatty acids, rayon and nylon yarn and so on.
- ❖ A large domestic market.

- ❖ Availability of cheap labor.
- ❖ Training facility in various technical institutes.
- ❖ On-going economic reforms.
- ❖ Improved living standards of the masses.

The wide range of rubber products manufactured by the Indian rubber industry comprises all types of heavy duty earth moving tyres. Auto tyres, tubes, automobile parts, footwear, belting, hoses, cycle tyres and tubes, cables and wires, camelback, battery boxes, latex products, pharmaceutical goods, besides moulded and extruded goods for mass consumption. The products manufactured also cover hi-tech industrial items. The important areas which the industry caters to include all the three wings of defence, civil, aviation, aeronautics, railways, agriculture, transport as also textile engineering industries, pharmaceuticals, mines, steel plants, ports, family planning programmes, hospitals, sports, practically to every conceivable field.

India's exports of rubber products, including tyres exceed Rs.2000 Crores. The range of products exported include automotive tyres and tubes, Rubber and canvas footwear, cycle tyres, pharmaceutical goods, rubber hoses, cots and aprons, belts and beltings, sheeting etc. These products are exported to over 85 countries, including USA, Germany, France, U.K., Italy, UAE, Saudi Arabia, Africa, Afghanistan, Bangladesh etc. With the saturation in rubber consumption in Western countries and the shift in consumption of rubber to the Asia Pacific region, the focal points for this decade for development will be India. The industry is expected to grow at over 8% p.a. in the coming decade. Taking into account the above prospects, the industry envisaged annual growth rate of 8% and the per capita consumption of rubber at 0.8 kg. against 14 kg. There exists tremendous scope for expansion and development in coming years provided basic raw materials, particularly natural and synthetic rubber, are made available in adequate quantity and at reasonable prices. Consumption of 1.25 million tones of rubber with per capita usage of 1.2 kgs. And exports of rubber goods worth Rs.30 billion seems possible by the year 2007

## INSTALLED CAPACITY

Product	Installed capacity per hour	No of working hours per day	Capacity per day	Capacity per annum 300 days per annum
Micro cellular rubber sheets	31.25 Kgs	16	500 Kgs	150000 Kgs

## Plant & Machinery:

No.	Description	Qty (Nos.)	Cost (Rs.)
(i)	Production machinery, Tools & Equipments consisting of the following :	Whole Plant	<b>32,00,000</b>
1.	Mixing mill of size 16"x 42" with reduction gear, 60 HP motor & accessories	1 No.	
2.	Mixing mill of size 14" x 36" with reduction gear, 40 HP motor & accessories	1 No.	
3.	Hydraulic Press - size 40" x 40" 5 day light-410 tons capacity, with 7.5 HP motor, hydraulic powerpack and accessories.	1 No.	
4.	Steam Vulcaniser 5ft. dia. and 10 ft. long.	1 No.	
5.	Baby boiler- oil fired 200 Kg/hr steam capacity with all pumps, motors, gauges and accessories.	1 No.	
6.	Moulds Dies & Accessories		
7.	Miscellaneous tools & equipments		
8.	Weighing scales : Platform type(100 Kg.)	1 No.	

	Single Pan type (10Kg.)- Digital type	1 No.	
(ii)	Material handling equipments		80,000
(iii)	Testing & Inspection equipments, tools & apparatus.		2,20,000
	<b>Total cost of machinery &amp; equipments</b>		<b>35,00,000</b>

## MANUFACTURING PROCESS

### 1. Process Outline

All the rubber chemicals are compounded along with rubber(both natural and synthetic, masticated previously) and measured quantities of the compound is moulded in suitable moulds in a hydraulic press, which is generally of Multi daylight type. After first curing, the sheets may be cured again second time(if required) in vulcanizer under steam pressure. The sheets are taken out and kept under load to avoid deforming while cooling.

## RAW MATERIALS

For	150000 Kgs		
	Qty-kgs	Rate/kg	Value Rs. Lakhs
Natural Rubber	42000	80.00	33.60
SBR-1958	10080	120.00	12.10
Microcumb	24000	100.00	24.00
Zinc Oxide	2040	60.00	1.22
China Clay	60000	5.00	3.00
Stearic acid	3600	30.00	1.08
Titanium dioxide	2400	84.00	2.02
Accelerator TMTD	900	115.00	1.04
Antioxidant PBN	600	250.00	1.50
Paraffin wax	720	32.00	0.23
Ethylene glycol	960	80.00	0.77
Cl resin	2400	25.00	0.60
Calcium silicate	12000	7.00	0.84
Sulphur	1800	8.00	0.14

Process oil	6000	25.00	1.50
DPT	3600	60.00	2.16
Miscellaneous Chemicals like talc etc			2.40
			88.19
Packing materials	150000	0.50	0.75

### Location Land & Building:

Built up area-Sq.ft	4000
Rent p.m.-Rs per .5 per sq.ft	20000
Advance-10 months. Rs	200000

### Utilities

#### Power & Fuel

Three phase-	KW	75.00
Power charges Rs.lakhs p.a		17.10
Fuel-Rs	10000p.m	1.20
Power & fuel		18.30
For process-Litres per day		2000
For human consumption-litres/day		200

### MAN POWER

		Monthly wages	Total
Supervisor	1	8000	8000
Skilled	6	5000	30000
Unskilled	12	3000	36000
Accounts Assistant	1	4000	4000
Sales Executive	1	5000	5000
Security	2	2000	4000
sub total			87000
Add benefits		20%	17400
Total per month			104400
TOTAL PER ANNUM-Rs. lakhs			12.53

## **COST OF PRODUCTION AND PROFITABILITY**

### **Assumptions**

Installed capacity	150000 Kgs of various Micro cellular rubber sheet per annum
Capacity utilisation	Year-1 -60% Year -2 -70% Year-3 onwards- 80%
Selling price	Rs.110.00 per Kg
Raw materials	As per the details given above
Packing materials	As per details given above
Power & Fuel	Rs.18.30 lakhs per annum at 100%
Wages and salaries	Rs. 12.53 lakhs with increase 5% every year.
Repairs and Maintenance	Rs.0.60 lakh per annum with 10% increase every year
Depreciation	Written down value method -15 % on machinery
Selling general and administrative expenses	Rs.30000 per month with 5% annual increase.
Interest on Term loan	11% per annum
Interest on working capital	11 % per annum
Income tax	33.66 % on profits

## **SUPPLIERS OF MACHINERY & EQUIPMENTS**

### **(a) Rubber Processing Machinery**

1. M/s. INDIAN EXPELLER WORKS PRIVATE LTD, A-4, Naroda Industrial Estate  
Ahmedabad - 382 330
2. M/s. MATHARU ENGINEERING WORKS, Plot No.1, Unit No.4, Opp. Tatwagyan  
Vidyapeeth, Ghodbunder Road, Chitalsar, Thane - 400 607
3. M/s. MODERN RUBBER MACHINERY MANUFACTURERS PVT. LTD, 310, Jogani  
Industrial Estate, 541, Senapati Bapat Marg, Dadar, Mumbai - 400 028
4. M/s. EMSON INDUSTRIES, 6-A, Shri Ram Industrial Estate, Kaley Marg, Bail Bazar,  
Kurla, Mumbai - 400 070
5. M/s. MODERN HYDRAULICS, 5, Italian Building(Ground Floor), 381, Sane Gruji Marg

Agripada, Near I.T.I., Mumbai - 400 011

6. M/s. PERUMACHERIL CASTING INDUSTRIES, Market landing, Kottayam - 686 001, Kerala
7. M/s. HIND HYDRAULICS & ENGINEERS, E-43/1, Okhla Industrial Area Phase-II  
New Delhi - 110 0020
8. M/s. MICROMERTICS ENGINEERS (P) LTD, 298, 4th Floor, Khaleel Shiraji Estate  
Fountain Plaza, Pantheon Road, Egmore, Chennai - 600 028
9. M/s. ANANT ENGINEERING WORKS, Bassi Road, Sirihind(N.Rly), Punjab - 140 406
10. M/s. SANTOSH INDUSTRIES, A-1, Sone Udyog, Parsi Panchayat Marg  
Andheri(East), Mumbai - 400 069

**(b) Steam Boilers**

1. M/s. THERMAX LTD, 610, Anna Salai, Chennai -600 006
2. M/s. MAXIMA BOILERS PVT LTD, 574/80,Mount Road, Congress building,  
Teynampet, Chennai-600 006
3. M/s. FIRETECH BOILERS PVT.LTD, No.211, 2nd. Cross, 38th Main, BTM Layout,  
2nd. Stage, Bangalore - 560 068
4. M/s. MAXTHERM, K3, Ambattur Industrial Estate, Ambattur, Chennai - 600 058
5. M/s. SOUTHERN BOILERS & EQUIPMENTS PVT.LTD, Y-169, Ist. Street  
Anna Nagar, Chennai- 600 040

**(c) Weighing Machines & Balances**

1. M/s. GIRI BROTHERS PRIVATE LTD, P.B.No. 1646, No. 51, Rajaji Salai,  
Chennai - 600 001
2. M/s. TAMILNADU SCALE INDUSTRIES, 166, Broadway, Chennai -600 108

**(d) Testing & Measuring Instruments**

1. M/s. P.B. SHAH & CO, 182, Linghi Chetty Street, Chennai - 600 001
2. M/s. BLUE STAR LTD, 620, Anna Salai, Chennai - 600 006
3. M/s. MADRAS METALLURGICAL SERVICES, 5, Lalithapuram Street  
Royapettah, Chennai - 600 014
4. M/s. PRESTO STANTEST PVT. LTD, C-117, F.F. Complex, Okhla Industrial Area



New Delhi - 110 020

5. M/s. PROLIFIC ENGINEERS, D-91, Sector –2, Noida -201 301,
6. M/s. A B S INSTRUMENTS PVT. LTD, 22, Electronics Complex, Guindy  
Chennai - 600 032

**(e) All miscellaneous equipments, tools, dies, moulds, fabricated items etc. can be procured from local sources.**

### **SUPPLIERS OF RAW MATERIALS**

#### **(a) Rubber**

1. M/s. VIRAJ RUBBERS PRIVATE LTD, 2-A, GNT Road, Ponniannanmedu  
Madhavaram Post, Chennai - 600 110
2. M/s. SILPRO TRADING CO, 8, Venkataratnam Road, Teynampet, Chennai - 600 018
3. M/s. ARASU RUBBER CORPORATION LTD, 259, Anna Salai, Chennai - 600 006
4. M/s. R.K. POLYMER, 196/5, Govindappa Naicken Street, Chennai - 600 001
5. M/s. AVT RUBBER PRODUCTS LTD, 22, Marshells Road, Egmore, Chennai-600 008
6. M/s. GOODLUCK RUBBER HOUSE, Apnaghar, 103 Marshells Road, Egmore  
Chennai- 600 008
7. M/s. KURIAN ABRAHAM LTD, 13/1, 423 M S Road, Parvathipuram, Nagercoil- 629 001
8. M/s. COCHIN MALABAR ESTATES, AND INDS.LTD, 6/117, Race Course Road  
Coimbatore- 641 018

#### **(b) Rubber Chemicals**

1. M/s. BAYER INDIA LTD, 749, Anna Salai, Chennai - 600 002
2. M/s. NATIONAL ORGANIC CHEMICAL INDUSTRIES LTD, 8, Haddows Road  
Chennai - 600 00
3. M/s. A.V. THOMAS & CO (INDIA) LTD, 22, Marshalls Road, Egmore, Chennai - 600  
008
4. M/s. DUJODWALA INDUSTRIES, 43, Armenian Street, Chennai - 600 001
5. M/s. BHARAT CARBON INDUSTRIES, 43, Buxipur Industrial Area, Gorakhpur -273 001, U.P.
6. M/s. RUBO-CHEM INDUSTRIES(P) LTD, 403/404, Laxmi Commercial Complex  
Senapati Bapat Marg, Mumbai - 400 028
7. M/s. I.C.I. INDIA LTD, Rubber Chemicals Divn., 149, Montieth Road, Chennai - 600 008

8. M/s. MONSANTO CHEMICALS OF INDIA LTD, F-4, Third Phase, Thiru Vi Ka Industrial Estate, Chennai - 600 097
9. M/s. PHILIPS CARBON BLACK LTD, 22, Marshalls Road, Egmore, Chennai - 600 008
10. M/s. R.K. POLYMER, 196/5, Govindappa Naicken Street, Chennai - 600 001
11. M/s. SOUTH INDIA RUBBER & CHEMICALS, C-4, Ram Square, No.2, Village Road Nungambakkam, Chennai - 600 034
12. M/s. MANICKAVELU CORPORATION, Plot No. W-300, 19th Street, Sector -C Anna Nagar western Extn, Chennai - 600 101

**(c) Miscellaneous Items**

All other miscellaneous items can be easily procured from the market sources.

**FINANCIAL ASPECTS**

**1. COST OF PROJECT**

	[Rs. lakhs]
Land & Building (Advance)	2.00
Plant & Machinery	35.00
Other Misc. assets	0.50
Pre-Operative expenses	2.00
Margin for WC	2.14
	41.64

**2. MEANS OF FINANCE**

Capital	15.39
Term Loan	26.25
	41.64

Term Loan amount is assumed at 75% of the value Machinery

### 3. COST OF PRODUCTION & PROFITABILITY STATEMENT

Years	[Rs. lakhs]				
	1	2	3	4	5
Installed Capacity-MTs	150	150	150	150	150
Utilisation	60%	70%	80%	80%	80%
Production/Sales-MTs	90	105	120	120	120
Selling Price per MT -Rs.	1.10	Lakhs			
Sales Value (Rs. lakhs)	<b>99.00</b>	<b>115.50</b>	<b>132.00</b>	<b>132.00</b>	<b>132.00</b>
Raw Materials	52.92	61.74	70.55	70.55	70.55
Packing Materials	0.45	0.53	0.60	0.60	0.60
Power& fuel	10.98	12.81	14.64	14.64	14.64
Wages & Salaries	12.53	13.15	13.81	14.50	15.23
Repairs & Maintenance	0.60	0.66	0.73	0.80	0.88
Depreciation	5.25	4.46	3.79	3.22	2.74
Cost of Production	82.73	93.35	104.12	104.31	104.64
Selling, Admin, & General exp	3.60	3.78	3.97	4.17	4.38
Interest on Term Loan	2.89	2.53	1.81	1.08	0.36
Interest on Working Capital	0.88	0.88	0.88	0.88	0.88
Total	90.10	100.54	110.78	110.44	110.26
Profit Before Tax	8.90	14.96	21.22	21.56	21.74
Provision for tax	3.00	5.03	7.14	7.26	7.32
Profit After Tax	<b>5.90</b>	<b>9.93</b>	<b>14.08</b>	<b>14.30</b>	<b>14.42</b>
Add: Depreciation	5.25	4.46	3.79	3.22	2.74
Cash Accruals	11.15	14.39	17.87	17.52	17.16
Repayment of Term loan	0.00	6.56	6.56	6.56	6.57

### 4. WORKING CAPITAL:

	Months	Values	%	Margin	Bank
	Consumptions			Amount	Finance
Raw Materials	0.50	2.21	25%	0.55	1.66

Consumables	2.00	0.08	25%	0.02	0.06
Finished goods	0.50	3.45	25%	0.86	2.59
Debtors	0.50	4.13	10%	0.41	3.72
Expenses	1.00	0.30	100%	0.30	0.00
		10.17		2.14	8.03

## 5. PROFITABILITY RATIOS BASED ON 80% UTILISATION

$$\frac{\text{Profit after Tax}}{\text{Sales}} = \frac{14.08}{132.00} \quad 11\%$$

$$\frac{\text{Profit before Interest and Tax}}{\text{Total Investment}} = \frac{23.91}{49.67} \quad 48\%$$

$$\frac{\text{Profit after Tax}}{\text{Promoters Capital}} = \frac{14.08}{15.39} \quad 91\%$$

## 6. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs. lakhs]
Wages & Salaries	13.81
Repairs & Maintenance	0.73
Depreciation	3.79
Admin. & General expenses	3.97
Interest on TL	1.81
	24.11
Profit Before Tax (P)	21.22
$\text{BEL} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{24.11}{45.33} \times \frac{80}{100} \times 100$	
	43% of installed capacity

# MOULDED RUBBER GOODS

## INTRODUCTION

Rubber moulded goods are used extensively in automobiles, 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 to some large scale units manufacturing domestic appliances, automobiles, industrial machinery etc. In fact units such as TELCO, Ashok Leyland, Hindustan Motors, TVS-Suzuki, TI-Cycles etc., depend on small scale units for their entire range of rubber parts. Similarly railways and defence establishments also purchase many moulded rubber goods from these sources.

## MARKET

Since the establishment of the first rubber goods manufacturing unit in 1921, the Indian rubber industry has maintained its forward march, particularly during the post-independence period. It has achieved overall expansion through increase in the range of products manufactured, in the number of units, in technological sophistication and self-sufficiency. Besides catering to the entire domestic demand, the industry is breaking new barriers on the export front. It projects tremendous growth in the 21<sup>st</sup> century

With around 6000 unit comprising 30 large scale, 300 medium scale and around 5600 SSI/tiny sector units, manufacturing 35000 rubber products, employing 400 thousand people, including around 22000 technically qualified support personnel, with a turnover of Rs.200 billions and contributing Rs.40 billions to the National Exchequer through taxes, duties and other levies, the Indian Rubber Industry plays a core sector role in the Indian national economy. The industry has certain distinct advantages like:

An extensive plantation sector

Indigenous availability of the basic raw materials, like natural rubber, synthetic rubber, reclaim rubber, carbon black, rubber chemicals, fatty acids, rayon and nylon yarn and so on.

- ❖ A large domestic market.
- ❖ Availability of cheap labour.
- ❖ Training facility in various technical institutes.
- ❖ On-going economic reforms.
- ❖ Improved living standards of the masses.

The wide range of rubber products manufactured by the Indian rubber industry comprises all types of heavy duty earth moving tyres. Auto tyres, tubes, automobile parts, footwear, belting, hoses, cycle tyres and tubes, cables and wires, camelback, battery boxes, latex products, pharmaceutical goods, besides moulded and extruded goods for mass consumption. The products manufactured also cover hi-tech industrial items. The important areas which the industry caters to include all the three wings of defence, civil, aviation, aeronautics, railways, agriculture, transport as also textile engineering industries, pharmaceuticals, mines, steel plants, ports, family planning programmes, hospitals, sports, practically to every conceivable field.

India's exports of rubber products, including tyres exceed Rs.2000 Crores. The range of products exported include automotive tyres and tubes, Rubber and canvas footwear, cycle tyres, pharmaceutical goods, rubber hoses, cots and aprons, belts and beltings, sheeting etc. These products are exported to over 85 countries, including USA, Germany, France, U.K., Italy, UAE, Saudi Arabia, Africa, Afghanistan, Bangladesh etc. With the saturation in rubber consumption in Western countries and the shift in consumption of rubber to the Asia Pacific region, the focal points for this decade for development will be India. The industry is expected to grow at over 8% p.a. in the coming decade. Taking into account the above prospects, the industry envisaged annual growth rate of 8% and the per capita consumption of rubber at 0.8 kg. against 14 kg. There exists tremendous scope for expansion and development in coming years provided basic raw materials, particularly natural and synthetic rubber, are made available in adequate quantity and at reasonable prices. Consumption of 1.25 million tones of rubber with per

capita usage of 1.2 kgs. And exports of rubber goods worth Rs.30 billion seems possible by the year 2007

### INSTALLED CAPACITY

Product	Installed capacity per hour	No of working hours per day	Capacity per day	Capacity per annum 300 days per annum
Moulded rubber goods	62.5 Kgs	8	500 Kgs	150 MT

### PLANT AND MACHINERY

No.	Description	Qty (Nos.)	Cost (Rs.)
(i)	Production machinery, Tools & Equipments consisting of the following :	Whole Plant	32,00,000
1.	Mixing mill of size 16" x 42" with reduction gear, 60 HP motor & accessories.	1 No.	
2.	Mixing mill of size 14" x 36" with reduction gear, 30 HP motor & accessories	1 No.	
3.	Hydraulic Press 50 cm x 50 cm 4 day light-100 tons capacity, with power pack, motor & accessories.	2 Nos.	
4.	Extruder 75 mm screw dia., with 10 HP motor & accessories.	1 No.	
5.	Steam heated, hand operated Fly Press 14" x 14" platen size.	1 No.	
6.	Steam heated, hand operated Fly	1 No.	

	Press 16" x 16" platen size.		
7.	Steam heated, hand operated Fly Press 24" x 24" platen size.	1 No.	
8.	Steam Vulcaniser 4ft. dia. and 8 ft. long.	1 No.	
9.	Baby boiler- oil fired 200 Kg/hr steam capacity with all pumps, motors, gauges and accessories.	1 No.	
10.	Moulds Dies & Accessories		
11.	Miscellaneous tools & equipments		
12.	Weighing scales :		
	Platform type(100 Kg.)	1 No.	
	Single Pan type (10Kg.)- Digital type	1 No.	
(ii)	Material handling equipments		1,00,000
(iii)	Testing & Inspection equipments, tools & apparatus.		2,00,000
	<b>Total cost of machinery &amp; equipments</b>		<b>35,00,000</b>

## 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 moulds 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 mould 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 moulds are lubricated either with soap solution or aerosols or silicones.



## RAW MATERIALS

For- nos

150000 Kgs

	Qty-kgs	Rate/kg	Value Rs lakhs
Natural Rubber	36000	80.00	28.80
SBR-1712	4320	120.00	5.18
Neoprin rubber	7200	110.00	7.92
Nitrile Rubber	2880	110.00	3.17
Zinc Oxide	2880	60.00	1.73
China Clay	43200	5.00	2.16
Whiting	43200	4.00	1.73
Stearic acid	1440	30.00	0.43
Carbon black	1440	40.00	0.58
Accelerator TMTD	1080	90.00	0.97
Antioxidant PBN	1080	100.00	1.08
Plasticisers	3600	150.00	5.40
Rosin	720	75.00	0.54
Paraffin wax	720	32.00	0.23
Calcium silicate	14400	7.00	1.01
Sulphur	1440	8.00	0.12
Process oil	1440	25.00	0.36
Sodium nitrate	720	40.00	0.29
Amonium chloride	720	50.00	0.36
Miscellaneous Chemicals like talc etc			1.20
			63.25
Packing materials	150000	0.50	0.75

## UTILITIES

### Powers & Fuel

Three phase-	KW	75.00
Power charges Rs. lakhs p.a		8.55
Fuel-Rs	10000p.m	1.20
Power & fuel		9.75
For process-Litres per day		2000
For human consumption-litres/day		200

## LOCATION LAND AND BUILDING

Built up area-Sq.ft	2000
Rent p.m.-Rs per .5 per sq.ft	10000
Advance-10 months. Rs	100000

## MANPOWER

	Nos	Monthly wages	Total
Supervisor	1	8000	8000
Skilled	6	5000	30000
Unskilled	12	3000	36000
Accounts Assistant	1	4000	4000
Sales Executive	1	5000	5000
Security	2	2000	4000
sub total			87000
Add benefits		20%	17400
Total per month			104400
TOTAL PER ANNUM-Rs. lakhs			12.53

## COST OF PRODUCTION AND PROFITABILTY

### Assumptions

Installed capacity	150 MT of assorted Moulded Rubber Goods per annum
Capacity utilisation	Year-1 -60% Year -2 -70% Year-3 onwards- 80%
Selling price	Rs.95.00 per kg
Raw materials	As per the details given above
Packing materials	As per details given above
Power & Fuel	Rs.9.75 lakhs per annum at 100%

Wages and salaries	Rs. 12.53 lakhs with increase 5% every year.
Repairs and Maintenance	Rs.0.60 lakh per annum with 10% increase during year
Depreciation	Written down value method -15 % on machinery
Selling general and administrative expenses	Rs.30000 per month with 5% increase every year.
Interest on Term loan	11% per annum
Interest on working capital	11 % per annum
Income tax	33.66 % on profits

### **MACHINERY SUPPLIERS:**

#### **(a) Rubber Processing Machinery**

1. M/s. INDIAN EXPELLER WORKS PRIVATE LTD, A-4, Naroda Industrial Estate  
Ahmedabad - 382 330
2. M/s. MATHARU ENGINEERING WORKS, Plot No.1, Unit No.4  
Opp. Tatwagyan Vidyapeeth, Ghodbunder Road, Chitalsar, Thane - 400 607
3. M/s. MODERN RUBBER MACHINERY MANUFACTURERS PVT. LTD  
310, Jogani Industrial Estate, 541, Senapati Bapat Marg, Dadar, Mumbai - 400 028
4. M/s. EMSON INDUSTRIES, 6-A, Shri Ram Industrial Estate,  
Kaley Marg, Bail Bazar, Kurla, Mumbai - 400 070
5. M/s. MODERN HYDRAULICS, 5, Italian Building(Ground Floor),  
381, Sane Gruji Marg, Agripada, Near I.T.I., Mumbai - 400 011
6. M/s. PERUMACHERIL CASTING INDUSTRIES, Market landing  
Kottayam - 686 001, Kerala
7. M/s. HIND HYDRAULICS & ENGINEERS, E-43/1, Okhla Industrial Area Phase-II  
New Delhi - 110 0020
8. M/s. MICROMERTICS ENGINEERS (P) LTD, 298, 4th Floor, Khaleel Shiraji Estate  
Fountain Plaza, Pantheon Road, Egmore, Chennai - 600 028
9. M/s. ANANT ENGINEERING WORKS, Bassi Road, Sirihind(N.Rly), Punjab - 140 406
10. M/s. SANTOSH INDUSTRIES, A-1, Sone Udyog, Parsi Panchayat Marg

Andheri(East), Mumbai - 400 069

**(b) Steam Boilers**

1. M/s. THERMAX LTD, 610, Anna Salai, Chennai -600 006
2. M/s. MAXIMA BOILERS PVT LTD, 574/80,Mount Road, Congress building, Teynampet, Chennai-600 006
3. M/s. FIRETECH BOILERS PVT.LTD, No.211, 2nd. Cross, 38th Main BTM Layout, 2nd. Stage, Bangalore - 560 068
4. M/s. MAXTHERM, K3, Ambattur Industrial Estate, Ambattur, Chennai - 600 058
5. M/s. SOUTHERN BOILERS & EQUIPMENTS PVT.LTD, Y-169, Ist. Street Anna Nagar, Chennai- 600 040

**(c) Weighing Machines & Balances**

1. M/s. GIRI BROTHERS PRIVATE LTD, P.B.No. 1646, No. 51, Rajaji Salai Chennai - 600 001
2. M/s. TAMILNADU SCALE INDUSTRIES, 166, Broadway, Chennai -600 108

**(d) Testing & Measuring Instruments**

1. M/s. P.B. SHAH & CO, 182, Linghi Chetty Street, Chennai - 600 001
2. M/s. BLUE STAR LTD, 620, Anna Salai, Chennai - 600 006
3. M/s. MADRAS METALLURGICAL SERVICES, 5, Lalithapuram Street, Royapettah Chennai - 600 014
4. M/s. PRESTO STANTEST PVT. LTD, C-117, F.F. Complex, Okhla Industrial Area New Delhi - 110 020
5. M/s. PROLIFIC ENGINEERS, D-91, Sector -2, Noida -201 301
6. M/s. A B S INSTRUMENTS PVT. LTD, 22, Electronics Complex, Guindy Chennai - 600 032

**SUPPLIERS OF RAW MATERIALS**

**(a) Rubber**

1. M/s. VIRAJ RUBBERS PRIVATE LTD, 2-A, GNT Road, Ponniannanmedu,

Madhavaram Post, Chennai - 600 110

2. M/s. SILPRO TRADING CO, 8, Venkataratnam Road, Teynampet, Chennai - 600 018
3. M/s. ARASU RUBBER CORPORATION LTD, 259, Anna Salai, Chennai - 600 006
4. M/s. R.K. POLYMER, 196/5, Govindappa Naicken Street, Chennai - 600 001
5. M/s. AVT RUBBER PRODUCTS LTD, 22, Marshells Road, Egmore, Chennai-600 008
6. M/s. GOODLUCK RUBBER HOUSE, Apnagar, 103 Marshells Road, Egmore  
Chennai- 600 008
7. M/s. KURIAN ABRAHAM LTD, 13/1, 423 M S Road, Parvathipuram, Nagercoil-629001
8. M/s. COCHIN MALABAR ESTATES, AND INDS.LTD, 6/117, Race Course Road  
Coimbatore- 641 018

**(b) Rubber Chemicals**

1. M/s. BAYER INDIA LTD, 749, Anna Salai, Chennai - 600 002
2. M/s. NATIONAL ORGANIC CHEMICAL INDUSTRIES LTD, 8, Haddows Road  
Chennai - 600 006
3. M/s. A.V. THOMAS & CO (INDIA) LTD, 22, Marshalls Road, Egmore, Chennai-600 008
4. M/s. DUJODWALA INDUSTRIES, 43, Armenian Street, Chennai - 600 001
5. M/s. BHARAT CARBON INDUSTRIES, 43, Buxipur Industrial Area  
Gorakhpur -273 001, U.P.
6. M/s. RUBO-CHEM INDUSTRIES(P) LTD, 403/404, Laxmi Commercial Complex  
Senapati Bapat Marg, Mumbai - 400 028
7. M/s. I.C.I. INDIA LTD, Rubber Chemicals Divn, 149, Montieth Road, Chennai - 600 008
8. M/s. MONSANTO CHEMICALS OF INDIA LTD, F-4, Third Phase, Thiru Vi Ka  
Industrial Estate, Chennai - 600 097
9. M/s. PHILIPS CARBON BLACK LTD, 22, Marshalls Road, Egmore, Chennai - 600 008
10. M/s. R.K. POLYMER, 196/5, Govindappa Naicken Street, Chennai - 600 001
11. M/s. SOUTH INDIA RUBBER & CHEMICALS, C-4, Ram Square, No.2, Village Road  
Nungambakkam, Chennai - 600 034
12. M/s. MANICKAVELU CORPORATION, Plot No. W-300, 19th Street, Sector -C  
Anna Nagar western Extn, Chennai - 600 101

## FINANCIAL ASPECTS

### 1. COST OF PROJECT

	[Rs. lakhs]
Land & Building (Advance)	1.00
Plant & Machinery	35.00
Other Misc. assets	0.50
Pre-Operative expenses	2.00
Margin for WC	1.73
	40.23

### 2. MEANS OF FINANCE

Capital	13.98
Term Loan	26.25
	40.23

Term Loan amount is assumed at 75% of the value Machinery

### 3. COST OF PRODUCTION & PROFITABILITY STATEMENT

	[Rs. lakhs]				
Years	1	2	3	4	5
Installed Capac city-MTs	150	150	150	150	150
Utilisation	60%	70%	80%	80%	80%
Production/Sales-MTs	90	105	120	120	120
Selling Price per Ton -Rs.	0.95				

Sales Value (Rs. lakhs)	<b>85.50</b>	<b>99.75</b>	<b>114.00</b>	<b>114.00</b>	<b>114.00</b>
Raw Materials	37.95	44.27	50.60	50.60	50.60
Packing Materials	0.45	0.53	0.60	0.60	0.60
Power& fuel	5.85	6.83	7.80	7.80	7.80
Wages & Salaries	12.53	13.15	13.81	14.50	15.23
Repairs & Maintenance	0.60	0.66	0.73	0.80	0.88
Depreciation	5.25	4.46	3.79	3.22	2.74
Cost of Production	62.63	69.90	77.33	77.52	77.85
Selling, Admin, & General exp	3.60	3.78	3.97	4.17	4.38
Interest on Term Loan	2.89	2.53	1.81	1.08	0.36
Interest on Working Capital	0.70	0.70	0.70	0.70	0.70
Total	69.82	76.91	83.81	83.47	83.29
Profit Before Tax	15.68	22.84	30.19	30.53	30.71
Provision for tax	5.28	7.69	10.16	10.27	10.34
Profit After Tax	<b>10.40</b>	<b>15.15</b>	<b>20.03</b>	<b>20.26</b>	<b>20.37</b>
Add: Depreciation	5.25	4.46	3.79	3.22	2.74
Cash Accruals	15.65	19.61	23.82	23.48	23.11
Repayment of Term loan	0.00	6.56	6.56	6.56	6.57

#### 4. WORKING CAPITAL:

	Months	Values	%	Margin	Bank
	Consumptions			Amount	Finance
Raw Materials	0.50	1.58	25%	0.40	1.18
Consumables	2.00	0.08	25%	0.02	0.06
Finished goods	0.50	2.61	25%	0.65	1.96
Debtors	0.50	3.56	10%	0.36	3.20
Expenses	1.00	0.30	100%	0.30	0.00
		8.13		1.73	6.40

## 5. PROFITABILITY RATIOS BASED ON 80% UTILISATION

$$\frac{\text{Profit after Tax}}{\text{Sales}} = \frac{20.03}{114.00} \quad 18\%$$

$$\frac{\text{Profit before Interest and Tax}}{\text{Total Investment}} = \frac{32.70}{46.63} \quad 70\%$$

$$\frac{\text{Profit after Tax}}{\text{Promoters Capital}} = \frac{20.03}{13.98} \quad 143\%$$

## 6. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs. lakhs]
Wages & Salaries	13.81
Repairs & Maintenance	0.73
Depreciation	3.79
Admin. & General expenses	3.97
Interest on TL	1.81
	24.11
Profit Before Tax (P)	30.19
BEL = $\frac{FC \times 100}{FC + P}$	$= \frac{24.11}{54.30} \times \frac{80}{100} \times 100$

36% of installed capacity or as  
Production volume 54 MTs or  
Sales value Rs.51.30 lacs



# **PRESSURE COOKER GASKETS**

## **INTRODUCTION**

The gaskets in pressure cookers act as seals. A pressure cooker gasket is used to prevent the escape of steam through the gap between the lid and the bottom of the cooker during the cooking process. This will ensure that the cooking takes place faster and more efficiently, which also results in considerable saving of cooking gas used in the process.

## **MARKET**

Pressure cookers have gained wide popularity among people on account of the immense convenience offered by them as an efficient, faster and easy to handle device in most of the middle class and upper middle class homes of today, for their day to day cooking. They are also easily affordable by many. Because of their demand and popularity many popular brands of these in different sizes are available in the market. Some of the very popular brands such as Prestige, Hawkins and Premier are in great demand. With the increasing pace of urbanization, economic growth and rising levels of income of the general populace, the demand for pressure cookers is bound to increase substantially in the years to come. Further, the gaskets are a frequently replaceable item because of wear and tear caused by the daily usage of cookers. As such they are sold in many provision and departmental stores. Thus there is a good scope for manufacturing these gaskets in the small scale sector.

Since the establishment of the first rubber goods manufacturing unit in 1921, the Indian rubber industry has maintained its forward march, particularly during the post-independence period. It has achieved overall expansion through increase in the range of products manufactured, in the number of units, in technological sophistication and self-sufficiency. Besides catering to the entire domestic demand, the industry is breaking new barriers on the export front. It projects tremendous growth in the 21<sup>st</sup> century

With around 6000 unit comprising 30 large scale, 300 medium scale and around 5600 SSI/tiny sector units, manufacturing 35000 rubber products, employing 400 thousand people, including around 22000 technically qualified support personnel, with a turnover of Rs.200 billions and contributing Rs.40 billions to the National Exchequer through taxes, duties and other levies, the Indian Rubber Industry plays a core sector role in the Indian national economy. The industry has certain distinct advantages like:

#### An extensive plantation sector

Indigenous availability of the basic raw materials, like natural rubber, synthetic rubber, reclaim rubber, carbon black, rubber chemicals, fatty acids, rayon and nylon yarn and so on.

- ❖ A large domestic market.
- ❖ Availability of cheap labor.
- ❖ Training facility in various technical institutes.
- ❖ On-going economic reforms.
- ❖ Improved living standards of the masses.

The wide range of rubber products manufactured by the Indian rubber industry comprises all types of heavy duty earth moving tyres. Auto tyres, tubes, automobile parts, footwear, belting, hoses, cycle tyres and tubes, cables and wires, camelback, battery boxes, latex products, pharmaceutical goods, besides moulded and extruded goods for mass consumption. The products manufactured also cover hi-tech industrial items. The important areas which the industry caters to include all the three wings of defence, civil, aviation, aeronautics, railways, agriculture, transport as also textile engineering industries, pharmaceuticals, mines, steel plants, ports, family planning programmes, hospitals, sports, practically to every conceivable field.

India's exports of rubber products, including tyres exceed Rs.2000 Crores. The range of products exported include automotive tyres and tubes, Rubber and canvas footwear,

cycle tyres, pharmaceutical goods, rubber hoses, cots and aprons, belts and beltings, sheeting etc. These products are exported to over 85 countries, including USA, Germany, France, U.K., Italy, UAE, Saudi Arabia, Africa, Afghanistan, Bangladesh etc. With the saturation in rubber consumption in Western countries and the shift in consumption of rubber to the Asia Pacific region, the focal points for this decade for development will be India. The industry is expected to grow at over 8% p.a. in the coming decade. Taking into account the above prospects, the industry envisaged annual growth rate of 8% and the per capita consumption of rubber at 0.8 kg. against 14 kg. There exists tremendous scope for expansion and development in coming years provided basic raw materials, particularly natural and synthetic rubber, are made available in adequate quantity and at reasonable prices. Consumption of 1.25 million tones of rubber with per capita usage of 1.2 kgs. And exports of rubber goods worth Rs.30 billion seems possible by the year 2007

#### **INSTALLED CAPACITY**

Product	Installed capacity per hour	No of working hours per day	Capacity per day	Capacity per annum 300 days per annum
Pressure cooker gaskets	63 Nos	8	500 Nos	150000 Nos.

#### **PLANT AND MACHINERY**

<b>No.</b>	<b>Description</b>	<b>Qty (Nos)</b>	<b>Cost (Rs.)</b>
(i)	Production machinery, Tools & Equipments consisting of the following:	Whole plant	10,00,000
1.	Mixing mill of size 10" × 24" with reduction Gear, 15 HP motor and accessories	1 No.	
2.	Rubber hot feed Extruder of size 3" with 10 HP motor and accessories including Die Plates.	1 No.	

3. Rubber moulding Hydraulic Press 24" × 24" with 6 Day lights, capacity 150 tons, with 5 HP motor and power pack	1 No.
4. Baby boiler 150 Kg/hr steam capacity with all Accessories (Diesel fired)	1 No.
5. Weighing scales:	
Platform type (100 Kg)	1 No.
Single Pan Type(10Kg) Digital type	1 No
(ii) Moulds & accessories	50,000
(iii) Testing & Inspection equipments,	50,000
<b>Total cost of machinery &amp; equipments</b>	<b>11,00,000</b>

## MANUFACTURING PROCESS

The required raw materials of rubber and the compounding ingredients are fed into a mixing mill for proper mastication and subsequent mixing of the necessary ingredients. The compounded material is then passed through an extruder with a suitable die to form the gasket geometry. These extruded strips are then cut to suitable lengths and placed in the mould cavities of a multi day light hydraulic press and cured under heat and pressure. The heat may be supplied by steam or electricity.

## RAW MATERIALS

For- Nos	150000		
	Qty-kgs	Rate/kg	Value Rs lakhs
Nitrile Rubber	1860	110.00	2.05
SBR-1502	2820	120.00	3.38
FEF Balck	195.00	40.00	0.08
Calcium carbonate	1400.00	15.00	0.21
Paraffin wax	232	32.00	0.07
Coumerne resin	175.00	150.00	0.26
Zinc Oxide	2880	60.00	1.73
Stearic acid	1440	30.00	0.43
Antioxidant PBN	1080	100.00	1.08

Accelerator TMTD	35	90.00	0.03
MBT	35.00	160.00	0.06
ZDC	35.00	120.00	0.04
Sulphur	24.00	8.00	0.00
Miscellaneous Chemicals like talc etc			1.20
Total			10.63
Packing materials	150000	0.50	0.75

### LOCATION LAND AND BUILDING

Built up area-Sq.ft	1200
Rent p.m.-Rs per .5 per sq.ft	6000
Advance-10 months. Rs	60000

### UTILITIES

#### Power & fuel

Three phase-	KW	20.00
Power charges Rs. lakhs p.a		2.28
Fuel-Rs	10000 p.m	1.20
Power & fuel		3.48
For process-Litres per day		2000
For human consumption-		200
litres/day		

### MANPOWER

	Nos	Monthly wages	Total
Supervisor	1	8000	8000
Skilled	4	5000	20000
Unskilled	4	3000	12000
Accounts Assistant	1	4000	4000
Sales Executive	1	5000	5000
Security	2	2000	4000
sub total			53000

Add benefits	20%	10600
Total per month		63600
TOTAL PER ANNUM-Rs. lakhs		7.63

## **COST OF PRODUCTION AND PROFITABILITY**

### **Assumptions**

Installed capacity	1.50 lakh nos. of various pressure cooker gaskets per annum
Capacity utilisation	Year-1 -60% Year -2 -70% Year-3 onwards- 80%
Selling price	Rs.28.00 per piece
Raw materials	As per the details given above
Packing materials	As per details given above
Power & Fuel	Rs.3.48 lakhs per annum at 100%
Wages and salaries	Rs. 7.63 lakhs with increase 5% every year.
Repairs and Maintenance	Rs.0.60 lakh per annum with 10% annual increase
Depreciation	Written down value method -15 % on machinery
Selling general and administrative expenses	Rs.30000 per month with 5% annual increase
Interest on Term loan	11% per annum
Interest on working capital	11 % per annum
Income tax	33.66 % on profits

### **MACHINERY SUPPLIERS:**

1. M/s.Indian Expeller Works Private Ltd, A-4, Naroda Industrial Estate  
Ahmedabad – 383 330

2. M/s. Matharu Engineering Works, Plot No.1, Unit No.4, Opp. Tatwagyan Vidyapeeth Ghodbunder Road, Chitalsar, Thane - 400607
3. M/s. Modern Rubber Machinery Manufacturers Pvt. Ltd, 310, Jogani Industrial Estate 541, Senapati Bapat Marg, Dadar, Mumbai – 400 028
4. M/s. Emson Industries, 6-A, Shri Ram Industrial Estate, Kaley Marg, Bail Bazar, Kurla Mumbai – 400 011
5. M/s. Modern Hydraulics, 5, Italian Building(Ground Floor), 381, Sane Gruji Marg Agripada, Near I.T.I, Mumbai – 400 011
6. M/s. Perumacheril Castings Industries, Market Landing, Kottayam – 686 001, Kerala
7. M/s. Hind Hydraulics & Engineers, E-43/1, Okhla industrial Area, Phase –II New Delhi – 110 002
8. M/s. Micromertics Engineers (P) Ltd, 298, 4<sup>th</sup> Floor, Khaleel Shiraji Estate Fountain Plaza, Pantheon Road, Egmore, Chennai – 600 028
9. M/s. Anant Engineering Works, Bassi Road, Sirihindi (N.Rly), Punjab – 140 406
10. M/s. Santhosh Industries, A-1, Sone Udyog, Parsi Panchayat Marg, Andheri (East) Mumbai – 400 069

**(b) Steam Boilers**

1. M/s. Thermax Ltd, 610, Anna Salai, Chennai – 600 006
2. M/s. Maxima Boilers Pvt Ltd, 574/80, Mount Road, Congress Building, Teynampet, Chennai – 600 006
3. M/s. Firetech Boilers Pvt. Ltd, No.211, 2<sup>nd</sup> Cross, 38<sup>th</sup> Main, BTM Layout, 2<sup>nd</sup> Stage, Bangalore – 560 068
4. M/s. Maxtherm, K3, Ambattur Industrial Estate, Ambattur, Chennai – 600 058
5. M/s. Southern Boilers & Equipments Pvt. Ltd, Y- 169, 1<sup>st</sup> Street, Anna Nagar , Chennai – 600 040

**(c) Weighing Machines & Balances**

1. M/s. Giri Brothers Private Ltd, P.B.No 1646, No.51, Rajaji Salai, Chennai – 600 001
2. M/s. Tamilnadu Scale Industries,166, Broadway, Chennai – 600 108

**(d) Testing & Measuring Instruments**

1. M/s. P.B.Shah & Co, 182, Linghi Chetty Street, Chennai – 600 001
2. M/s. Blue Star Ltd, 620, Anna Salai, Chennai – 600 006
3. Madras Metallurgical Services, 5, Lalithapuram Street, Royapettah, Chennai - 600014
4. M/s. Presto Stantest Pvt. Ltd, C-117, F.F. Complex, Okhla Industrial Area,  
New Delhi – 110 020
5. M/s. Prolific Engineers, D-91, Sector – 2, Noida – 201 301
6. M/s. ABS instruments Pvt. Ltd, 22, Electronics Complex, Guindy, Chennai – 600 032

**(e) All miscellaneous equipments, tools, dies, moulds, fabricated items etc can be procured from local sources.**

**Suppliers of Raw Materials**

**(a) Rubber**

1. M/s. Viraj Rubbers Private Ltd, 2-A, GNT Road, Ponniannanmedu, Madhavaram Post  
Chennai – 600 110
2. M/s. Silpro Trading Co, 8, Venkataratnam Road, Teynampet, Chennai – 600 018
3. M/s.Arasu Rubber Corporation Ltd, 259, Anna Salai, Chennai – 600 006
4. M/s. R.K.polymer, 196/5, Govindappa naicken Street, Chennai – 600 001
5. M/s. AVT Rubber products Ltd, 22, Marshells Road, Egmore, Chennai – 600 008
6. M/s. Goodluck Rubber House, Apnagar, 103 Marshells Road, Egmore  
Chennai – 600 008
7. M/s. Kurian Abraham Ltd, 13/1, 423 MS Road, Parvathipuram, Nagercoil – 629 001
8. M/s. Cochin Malabar Estates and Inds Ltd, 6/117, Race Course Road,  
Coimbatore – 641 018



**(b) Rubber Chemicals**

1. M/s. Bayer India Ltd, 749, Anna Salai, Chennai – 600 002,
2. M/s. National Organic Chemical industries Ltd, 8, Haddows Road, Chennai – 600 006
3. M/s. A.V.Thomas & Co(India) Ltd, 22, Marshalls Road, Egmore, Chennai – 600 008
4. M/s. Dujodwala Industries, 43, Armenian Street, Chennai – 600 001
5. M/s. Bharat Carbon Industries, 43, Buxipur Industrial Area, Gorakhpur – 273 001, U.P
6. M/s.Rubo-Chem Industries(P) Ltd, 403/404, Ixmi Commercial Complex,  
Senapati Bapat Marg, Mumbai – 400 028
7. M/s. I.C.I India Ltd, Rubber Chemicals Division, 149, Montieth Road,  
Chennai – 600 008
8. M/s. Monsanto Chemicals of India Ltd, F-4, Third Phase, Thiru Vi ka Industrial Estate  
Chennai – 600 097
- 9.M/s. Philips Carbon Black Ltd, 22, Marshalls Road, Egmore, Chennai – 600 008
10. M/s. R.K.Polymer, 196/5, Govindappa Naicken Street, Chennai – 600 001
11. M/s. South India Rubber & Chemicals, C-4, Ram Square, No.2 Village Road  
Nungabakkam, Chennai – 600 001
12. M/s. Manickavelu Corporation, Plot No. W-300, 19<sup>th</sup> Street, Sector – C,  
Anna Nagar Western Extn, Chennai – 600 101

## FINANCIAL ASPECTS

### 1. COST OF PROJECT

[Rs. lakhs]

Land & Building (Advance)	0.60
Plant & Machinery	11.00
Other Misc. assets	0.50
Pre-Operative expenses	1.50
Margin for WC	0.70
	14.30

### 2. MEANS OF FINANCE

Capital	6.05
Term Loan	8.25
	14.30

Term Loan amount is assumed at 75% of the value Machinery

### 3. COST OF PRODUCTION & PROFITABILITY STATEMENT

[Rs. lakhs]

Years	1	2	3	4	5
Installed Capac city-Nos	150000	150000	150000	150000	150000
Utilisation	60%	70%	80%	80%	80%
Production/Sales-Nos	90000	105000	120000	120000	120000
Selling Price per piece -Rs.	28.00				

Sales Value (Rs. lakhs)	<b>25.20</b>	<b>29.40</b>	<b>33.60</b>	<b>33.60</b>	<b>33.60</b>
Raw Materials	6.38	7.44	8.50	8.50	8.50
Packing Materials	0.45	0.53	0.60	0.60	0.60
Power& fuel	2.09	2.44	2.78	2.78	2.78
Wages & Salaries	7.63	8.01	8.41	8.83	9.27
Repairs & Maintenance	0.60	0.66	0.73	0.80	0.88
Depreciation	1.65	1.40	1.19	1.01	0.86
Cost of Production	18.80	20.48	22.21	22.52	22.89
Selling, Admin, & General exp	3.60	3.78	3.97	4.17	4.38
Interest on Term Loan	0.91	0.79	0.57	0.34	0.11
Interest on Working Capital	0.20	0.20	0.20	0.20	0.20
Total	23.51	25.25	26.95	27.23	27.58
Profit Before Tax	1.69	4.15	6.65	6.37	6.02
Provision for tax	0.00	1.40	2.24	2.14	2.03
Profit After Tax	<b>1.69</b>	<b>2.75</b>	<b>4.41</b>	<b>4.23</b>	<b>3.99</b>
Add: Depreciation	1.65	1.40	1.19	1.01	0.86
Cash Accruals	3.34	4.15	5.60	5.24	4.85
Repayment of Term loan	0.00	2.06	2.06	2.06	2.07

#### 4. WORKING CAPITAL:

	Months Consumptions	Values	%	Margin Amount	Bank Finance
Raw Materials	0.50	0.27	25%	0.07	0.20
Consumables	2.00	0.08	25%	0.02	0.06
Finished goods	0.50	0.78	25%	0.20	0.58
Debtors	0.50	1.05	10%	0.11	0.94
Expenses	1.00	0.30	100%	0.30	0.00
		2.48		0.70	1.78

## 5. PROFITABILITY RATIOS BASED ON 80% UTILISATION

<u>Profit after Tax</u>	=	<u>4.41</u>	13%
Sales		33.60	
<u>Profit before Interest and Tax</u>	=	<u>7.42</u>	46%
Total Investment		16.08	
<u>Profit after Tax</u>	=	<u>4.41</u>	73%
Promoters Capital		6.05	

## 6. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs. lakhs]
Wages & Salaries	8.41
Repairs & Maintenance	0.73
Depreciation	1.19
Admin. & General expenses	3.97
Interest on TL	0.57
	14.87
Profit Before Tax (P)	6.65

$$\text{BEL} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{14.87}{21.52} \times \frac{80}{100} \times 100$$

55% of installed capacity  
or our sales value of Rs.23.10 lacs  
or Production volume 82500 Nos.

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# **RADIATOR HOSES**

## **INTRODUCTION**

The function of Radiator hose in a vehicle is to provide a flexible connection between the engine block and radiator. This is used for the efficient cooling of automobile engines. The Hose must permit carrying of water at a high temperature and must be flexible in order to avoid transmission of any distorting loads to the radiator tank, and not be too soft as to result in collapse and throttle of water supply. These hoses are shaped hoses and the size of the hose varies for different vehicles such as buses, lorries, trucks, cars, jeeps , tractors etc.

## **MARKET**

Natural Rubber (NR) is produced from latex or field coagulam obtained from rubber trees planted in plantations.

The most important forms in which NR is processed and marketed are the following: Sheets, Crepes, Block rubber and Preserved Latex Concentrates. In India sheet rubber designated as RSS 1, RSS 2, RSS 3, RSS 4, RSS 5 are the most commonly produced and marketed. Block Rubber is designated in the grades of ISNR.

During 2004-05, the production of natural rubber (NR) in India was 749,665 tonnes as against 711,650 produced in 2003-04.

The performance of the rubber manufacturing sector improved significantly with the revival of the industrial sector. The rubber goods manufacturing industry in India showed a growth rate of 5.0 percent with a consumption of 7,55,405 tonnes during 2004-05 as against 719,600 tonnes during 2003-04 with 3.5% growth. The auto tyre-manufacturing sector improved its growth slightly from 7.1 percent in 2003-04 to 7.4 percent in 2004-05. The impressive growth of 2.3 percent of the non-tyre sector this year from the negative growth of 0.3 percent of the previous year attributed the overall growth to 5.0 percent.

<b>Table 2 CONSUMPTION OF NR AND SR</b>			
	<b>2004-05</b>	<b>2003-04</b>	<b>Growth (%)</b>
	<b>(Tonnes)</b>		
<b>Natural Rubber</b> Auto Tyres & Tubes	406226	378185	7.4
General Rubber goods	349179	341415	2.
<b>Total NR</b>	<b>755405</b>	<b>719600</b>	<b>5.0</b>
<b>Synthetic Rubber</b>			
Auto Tyres & Tubes	131267	119367	10.0
General Rubber Goods	93383	90823	2.8
<b>Total SR</b>	<b>224650</b>	<b>210190</b>	<b>6.9</b>
<b>NR &amp;</b>			
Auto Tyres & Tubes	537493	97552	8.0
General Rubber goods	442562	432238	2.4
<b>Total NR &amp; SR</b>	<b>980055</b>	<b>929790</b>	<b>5.4</b>

Synthetic Rubber (SR) production increased to 94,209 tonnes during 2004-05 from 88,366 tonnes during the previous year (2003-04) registering a growth of 6.6 percent and the increase was mainly in polybutadiene rubber.

## **GLOBAL SCENARIO**

In 2004 the world NR production increased to 8.62 million tonnes from 7.99 million tonnes in 2003 with an increase of 7.9 per cent over the previous year. The growth in world NR output was the result of a sharp rise in Malaysian and Indonesian production. SR production in 2004 increased to 11.95 million tonnes from 11.45 million tonnes during 2003 at a growth rate of 4.4 per cent.

The world NR consumption increased by 3.8 percent to 8.25 million tonnes in 2004

from 7.95 million tonnes of 2003. In 2004, SR consumption increased to 11.69 million tonnes from 11.36 million tonnes in 2003. The share of world SR consumption stood at 58.6 in 2004 whereas it was 58.8 per cent in 2003. China increased its share of world consumption to almost 21% in 2004 from 18.8% in 2003. In addition to China, India, Brazil, Taiwan, Indonesia, etc improved its share of rubber consumption. The current global scenario is presented in Table-5.

The International Rubber Study Group (IRSG) has projected the world consumption of NR to grow by 5.2% during 2005 and 3.6% during 2006. The global production of NR is expected to grow by 3.6% during 2005 and may increase by only 0.9% during 2006. The major producing countries may continue to show reasonably high growth rates this year and will not be sustained next year as demand and prices may be weaker.

Source: Statistics and Planning Department, Rubber Board

Since the establishment of the first rubber goods manufacturing unit in 1921, the Indian rubber industry has maintained its forward march, particularly during the post-independence period. It has achieved overall expansion through increase in the range of products manufactured, in the number of units, in technological sophistication and self-sufficiency. Besides catering to the entire domestic demand, the industry is breaking new barriers on the export front. It projects tremendous growth in the 21<sup>st</sup> century

With around 6000 unit comprising 30 large scale, 300 medium scale and around 5600 SSI/tiny sector units, manufacturing 35000 rubber products, employing 400 thousand people, including around 22000 technically qualified support personnel, with a turnover of Rs.200 billions and contributing Rs.40 billions to the National Exchequer through taxes, duties and other levies, the Indian Rubber Industry plays a core sector role in the Indian national economy. The industry has certain distinct advantages like:

An extensive plantation sector

Indigenous availability of the basic raw materials, like natural rubber, synthetic rubber, reclaim rubber, carbon black, rubber chemicals, fatty acids, rayon and nylon yarn and so on.

A large domestic market.

Availability of cheap labor.

Training facility in various technical institutes.

On-going economic reforms.

Improved living standards of the masses.

The wide range of rubber products manufactured by the Indian rubber industry comprises all types of heavy duty earth moving tyres. Auto tyres, tubes, automobile parts, footwear, belting, hoses, cycle tyres and tubes, cables and wires, camelback, battery boxes, latex products, pharmaceutical goods, besides moulded and extruded goods for mass consumption. The products manufactured also cover hi-tech industrial items. The important areas which the industry caters to include all the three wings of defence, civil, aviation, aeronautics, railways, agriculture, transport as also textile engineering industries, pharmaceuticals, mines, steel plants, ports, family planning programmes, hospitals, sports, practically to every conceivable field.

India's exports of rubber products, including tyres exceed Rs.2000 Crores. The range of products exported include automotive tyres and tubes, Rubber and canvas footwear, cycle tyres, pharmaceutical goods, rubber hoses, coats and aprons, belts and beltings, sheeting etc. These products are exported to over 85 countries, including USA, Germany, France, U.K., Italy, UAE, Saudi Arabia, Africa, Afghanistan, Bangladesh etc. With the saturation in rubber consumption in Western countries and the shift in consumption of rubber to the Asia Pacific region, the focal points for this decade for development will be India. The industry is expected to grow at over 8% p.a. in the coming decade. Taking into account the above prospects, the industry envisaged annual growth rate of 8% and the per capita consumption of rubber at 0.8 kg. against 14 kg. There exists tremendous scope for expansion and development in coming years provided basic raw materials, particularly natural and synthetic rubber, are made available in adequate quantity and at reasonable prices. Consumption of 1.25 million tones of rubber with per capita usage of 1.2 kgs. And exports of rubber goods worth Rs.30 billion seems possible by the year 2007



## INSTALLED CAPACITY

Product	Installed capacity per hour	No of working hours per day	Capacity per day	Capacity per annum 300 days per annum
Radiator hoses	37.5 Nos	8	300 Nos	90000 Nos

## PLANT AND MACHINERY

No.	Description	Qty (Nos.)	Cost (Rs.)
(i)	Production machinery, Tools & Equipments consisting of the following :	Whole Plant	<b>22,50,000</b>
1.	Mixing mill of size 14" x 36" with reduction gear, 40 HP motor & accessories.	1 No.	
2.	High speed mixer 250 litres capacity with 10 HP motor with Inverter control.	1 No.	
3.	Extruder 75 mm. dia Screw with 15 HP motor & accessories.	1 No.	
4.	Spreading machine(60" x 18") with 5 HP motor & accessories.	1 No.	
5.	Steam Vulcaniser 4' dia. and 10' long with trolley arrangement.	1 No.	
6.	Wrapping machine	1 No.	
7.	Baby boiler- oil fired 200 Kg/hr steam capacity with all pumps, motors, gauges and accessories.	1 No.	
8.	Building rollers, Buiding table, Consolidation rollers & mandrels		

9.	Miscellaneous equipments like Pump(3 HP), Compressor(100 Psi) etc.		
10.	Weighing scales :		
	Platform type(100 Kg.)	1 No.	
	Single Pan type (10Kg.)- Digital type	1 No.	
(ii)	Material handling equipments		1,00,000
(iii)	Testing & Inspection equipments, tools & apparatus.		1,50,000
	<b>Total cost of machinery &amp; equipments</b>		<b>25,00,000</b>

## MANUFACTURING PROCESS

The radiator hose consists of three basic components, viz.,

(a) The Inner Tube (b) The Reinforcing Fibre and (c) The Rubber Cover

The rubber lining is compounded to withstand the service temperature of hot water and cover compound to function effectively under the operating environment. The reinforcing fabric provides strength to withstand external and internal pressures.

Typical formulations are as follows :

The tube and cover compounds are first prepared in the mixing mill and allowed to mature for about 24 hours. The cover compound is sheeted out of the mill. The tube

compound is pre-warmed in a mixing mill and fed into the extruder to produce tubing of required cross section.

A solution of the spread compound is prepared in a churning mill and is then applied to the fabric using a spreader. The spread fabric is dried, wound up on rolls and is cut to required size. The extruded tube is cut into specified lengths and blown onto the mandrel of appropriate shape, using compressed air. The required plies of fabric are then applied over the tube followed by the rubber cover. The whole assembly is finally wrapped with a wet cloth tape and placed over mandrels in an autoclave for vulcanisation. After curing, the hoses are removed from the mandrels and the cloth tape wrappings are removed. The finished hoses are inspected for defects and packed for storage and despatch.

## RAW MATERIALS

For-nos	Qty-kgs	Rate/kg	Value Rs. Lakhs
	90000		
Nitrile Rubber	2808	110.00	3.09
Zinc Oxide	1296	60.00	0.78
Stearic acid	486	30.00	0.15
SRF Balck	10800	40.00	4.32
Hard clay	8100	7.00	0.57
Calcium carbonate	1080	15.00	0.16
Process oil	270	25.00	0.07
Pine tar	540	35.00	0.19
Sulphur	540	8.00	0.04
Vulcanox SP	43	115.00	0.05

Pilcure TMT	594	100.00	0.59
Pilnox TDQ	216	115.00	0.25
Solvent oil	13500	25.00	3.38
Cotton fabric 50" wide	13500	30.00	4.05
Miscellaneous Chemicals like talc etc			1.20
Total			18.88
Packing materials	90000	0.50	0.45

### LOCATION LAND AND BUILDING

Built up area-Sq.ft	2500
Rent p.m.-Rs per .5 per sq.ft	12500
Advance-10 months.Rs	125000

### UTILITIES

Three phase-	KW	60.00
Power charges Rs.lakhs p.a		6.84
Fuel-Rs	10000 p.m	1.20
Power & fuel		8.04
For process-Litres per day		2000
For human consumption-		200
litres/day		

### MANPOWER

	Nos	Monthly wages	Total
Supervisor	1	8000	8000
Skilled	3	5000	15000
Unskilled	6	3000	18000
Accounts Assistant	1	4000	4000
Sales Executive	1	5000	5000
Security	2	2000	4000

sub total		54000
Add benefits	20%	10800
Total per month		64800
TOTAL PER ANNUM-Rs. lakhs		7.78

## **COST OF PRODUCTION AND PROFITABILTY**

### **Assumptions**

Installed capacity	90000 nos. of Radiator Hoses per annum
Capacity utilisation	Year-1 -60% Year -2 -70% Year-3 onwards- 80%
Selling price	Rs.70.00 per piece
Raw materials	As per the details given above
Packing materials	As per details given above
Power & Fuel	Rs.8.04 lakh per annum at 100%
Wages and salaries	Rs. 7.78 lakhs with increase 5% every year.
Repairs and Maintenance	Rs.0.60 lakh per annum with 10% annual increase
Depreciation	Written down value method -15 % on machinery
Selling general and administrative expenses	Rs.30000 per month with 5% annual increase
Interest on Term loan	11% per annum
Interest on working capital	11 % per annum
Income tax	33.66 % on profits

### **MACHINERY SUPPLIERS**

#### **(a) Rubber Processing Machinery**

1. M/s. INDIAN EXPELLER WORKS PRIVATE LTD, A-4, Naroda Industrial Estate  
Ahmedabad - 382 330
2. M/s. MATHARU ENGINEERING WORKS, Plot No.1, Unit No.4

- Opp. Tatwagyan Vidyapeeth, Ghodbunder Road, Chitalsar, Thane - 400 607
3. M/s. MODERN RUBBER MACHINERY MANUFACTURERS PVT. LTD,  
310, Jogani Industrial Estate, 541, Senapati Bapat Marg, Dadar, Mumbai - 400 028
  4. M/s. EMSON INDUSTRIES, 6-A, Shri Ram Industrial Estate, Kaley Marg,  
Bail Bazar, Kurla, Mumbai - 400 070
  5. M/s. MODERN HYDRAULICS, 5, Italian Building(Ground Floor),381, Sane Gruji Marg  
Agripada, Near I.T.I., Mumbai - 400 011.
  6. M/s. PERUMACHERIL CASTING INDUSTRIES, Market landing,  
Kottayam - 686 001, Kerala.
  7. M/s. HIND HYDRAULICS & ENGINEERS, E-43/1, Okhla Industrial Area Phase-II  
New Delhi - 110 0020
  8. M/s. MICROMERTICS ENGINEERS (P) LTD, 298, 4th Floor, Khaleel Shiraji Estate  
Fountain Plaza, Pantheon Road, Egmore, Chennai - 600 028
  9. M/s. ANANT ENGINEERING WORKS, Bassi Road, Sirihind(N.Rly), Punjab - 140 406
  10. M/s. SANTOSH INDUSTRIES, A-1, Sone Udyog, Parsi Panchayat Marg  
Andheri(East), Mumbai - 400 069.

**(b) Steam Boilers**

1. M/s. THERMAX LTD, 610, Anna Salai, Chennai -600 006
2. M/s. MAXIMA BOILERS PVT LTD, 574/80,Mount Road, Congress building,  
Teynampet, Chennai-600 006
3. M/s. FIRETECH BOILERS PVT.LTD, No.211, 2nd. Cross, 38th Main,  
BTM Layout, 2nd. Stage, Bangalore - 560 068
4. M/s. MAXTHERM, K3, Ambattur Industrial Estate, Ambattur, Chennai - 600 058
5. M/s. SOUTHERN BOILERS & EQUIPMENTS PVT.LTD, Y-169, Ist. Street  
Anna Nagar, Chennai- 600 040.

**(c) Weighing Machines & Balances**

1. M/s. GIRI BROTHERS PRIVATE LTD, P.B.No. 1646, No. 51, Rajaji Salai  
Chennai - 600 001
2. M/s. TAMILNADU SCALE INDUSTRIES, 166, Broadway, Chennai -600 108

#### **(d) Testing & Measuring Instruments**

1. M/s. P.B. SHAH & CO, 182, Linghi Chetty Street, Chennai - 600 001
2. M/s. BLUE STAR LTD, 620, Anna Salai, Chennai - 600 006
3. M/s. MADRAS METALLURGICAL SERVICES, 5, Lalithapuram Street  
Royapettah, Chennai - 600 014
4. M/s. PRESTO STANTEST PVT. LTD, C-117, F.F. Complex, Okhla Industrial Area  
New Delhi - 110 020
5. M/s. PROLIFIC ENGINEERS, D-91, Sector -2, Noida -201 301,
6. M/s. A B S INSTRUMENTS PVT. LTD, 22, Electronics Complex, Guindy  
Chennai - 600 032

#### **SUPPLIERS OF RAW MATERIALS**

##### **(a) Rubber**

1. M/s. VIRAJ RUBBERS PRIVATE LTD, 2-A, GNT Road, Ponniannanmedu,  
Madhavaram Post, Chennai - 600 110
2. M/s. SILPRO TRADING CO, 8, Venkataratnam Road, Teynampet  
Chennai - 600 018
3. M/s. ARASU RUBBER CORPORATION LTD, 259, Anna Salai, Chennai - 600 006
4. M/s. R.K. POLYMER, 196/5, Govindappa Naicken Street, Chennai - 600 001
5. M/s. AVT RUBBER PRODUCTS LTD, 22, Marshells Road, Egmore, Chennai-600 008
6. M/s. GOODLUCK RUBBER HOUSE, Apnagar, 103 Marshells Road, Egmore  
Chennai- 600 008.
7. M/s.KURIAN ABRAHAM LTD,13/1, 423 MS Road, Parvathipuram, Nagercoil- 629 001
8. M/s. COCHIN MALABAR ESTATES, AND INDS.LTD, 6/117, Race Course Road,  
Coimbatore- 641 018

##### **(b) Rubber Chemicals**

1. M/s. BAYER INDIA LTD, 749, Anna Salai, Chennai - 600 002
2. M/s. NATIONAL ORGANIC CHEMICAL INDUSTRIES LTD, 8, Haddows Road  
Chennai - 600 006
3. M/s. A.V. THOMAS & CO (INDIA) LTD, 22, Marshalls Road, Egmore  
Chennai - 600 008

4. M/s. DUJODWALA INDUSTRIES, 43, Armenian Street, Chennai - 600 001
5. M/s. BHARAT CARBON INDUSTRIES, 43, Buxipur Industrial Area  
Gorakhpur -273 001, U.P.
6. M/s. RUBO-CHEM INDUSTRIES(P) LTD, 403/404, Laxmi Commercial Complex  
Senapati Bapat Marg, Mumbai - 400 028
7. M/s. I.C.I. INDIA LTD, Rubber Chemicals Divn., 149, Montieth Road,  
Chennai - 600 008
8. M/s. MONSANTO CHEMICALS OF INDIA LTD, F-4, Third Phase  
Thiru Vi Ka Industrial Estate, Chennai - 600 097
9. M/s. PHILIPS CARBON BLACK LTD, 22, Marshalls Road, Egmore  
Chennai - 600 008
10. M/s. R.K. POLYMER, 196/5, Govindappa Naicken Street, Chennai - 600 001
11. M/s. SOUTH INDIA RUBBER & CHEMICALS, C-4, Ram Square, No.2, Village Road  
Nungambakkam, Chennai - 600 034
12. M/s. MANICKAVELU CORPORATION, Plot No. W-300, 19th Street, Sector -C  
Anna Nagar western Extn., Chennai - 600 101

## **FINANCIAL ASPECTS**

### **1. COST OF PROJECT**

	[Rs. lakhs]
Land & Building (Advance)	1.25
Plant & Machinery	25.00
Other Misc. assets	0.50
Pre-Operative expenses	1.50
Margin for WC	0.89
	29.14

### **2. MEANS OF FINANCE**

Capital	10.39
Term Loan	18.75
	29.14



Term Loan amount is assumed at 75% of the value Machinery

### 3. COST OF PRODUCTION & PROFITABILITY STATEMENT

	[Rs. lakhs]				
Years	1	2	3	4	5
Installed Capac city-Nos	90000	90000	90000	90000	90000
Utilisation	60%	70%	80%	80%	80%
Production/Sales-Nos	54000	63000	72000	72000	72000
Selling Price per piece -Rs.	70.00				
Sales Value (Rs. lakhs)	<b>37.80</b>	<b>44.10</b>	<b>50.40</b>	<b>50.40</b>	<b>50.40</b>
Raw Materials	11.33	13.21	15.10	15.10	15.10
Packing Materials	0.27	0.32	0.36	0.36	0.36
Power& fuel	4.82	5.63	6.43	6.43	6.43
Wages & Salaries	7.78	8.16	8.57	9.00	9.45
Repairs & Maintenance	0.60	0.66	0.73	0.80	0.88
Depreciation	3.75	3.19	2.71	2.30	1.96
Cost of Production	28.55	31.17	33.90	33.99	34.18
Selling, Admin, & General exp	3.60	3.78	3.97	4.17	4.38
Interest on Term Loan	2.06	1.80	1.29	0.77	0.26
Interest on Working Capital	0.30	0.30	0.30	0.30	0.30
Total	34.51	37.05	39.46	39.23	39.12
Profit Before Tax	3.29	7.05	10.94	11.17	11.28
Provision for tax	1.11	2.37	3.68	3.76	3.80
Profit After Tax	<b>2.18</b>	<b>4.68</b>	<b>7.26</b>	<b>7.41</b>	<b>7.48</b>
Add: Depreciation	3.75	3.19	2.71	2.30	1.96
Cash Accruals	5.93	7.87	9.97	9.71	9.44
Repayment of Term loan	0.00	4.69	4.69	4.69	4.68

### 4. WORKING CAPITAL:

	Months	Values	%	Margin	Bank
	Consumptions			Amount	Finance
Raw Materials	0.50	0.47	25%	0.12	0.35

Consumables	2.00	0.05	25%	0.01	0.04
Finished goods	0.50	1.19	25%	0.30	0.89
Debtors	0.50	1.58	10%	0.16	1.42
Expenses	1.00	0.30	100%	0.30	0.00
		3.59		0.89	2.70

## 5. PROFITABILITY RATIOS BASED ON 80% UTILISATION

<u>Profit after Tax</u>	=	<u>7.26</u>	14%
Sales		50.40	
<u>Profit before Interest and Tax</u>	=	<u>12.53</u>	39%
Total Investment		31.84	
<u>Profit after Tax</u>	=	<u>7.26</u>	70%
Promoters Capital		10.39	

## 6. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs. lakhs]
Wages & Salaries	8.57
Repairs & Maintenance	0.73
Depreciation	2.71
Admin. & General expenses	3.97
Interest on TL	1.29
	17.27

Profit Before Tax (P) 10.94

$$\text{BEL} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{17.27}{28.21} \times \frac{80}{100} \times 100$$

49% of installed capacity or

Production volume 44100

Nos. or Sales value Rs.30.87

lacs.

