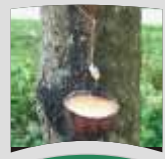
CAREER IN RUBBER

Education, Training & Skill Development



INDIA rubber expo 2017

NRC-2015

ALL INDIA RUBBER INDUSTRIES ASSOCIATION

AIRIA

1945

Rubber India Weekly
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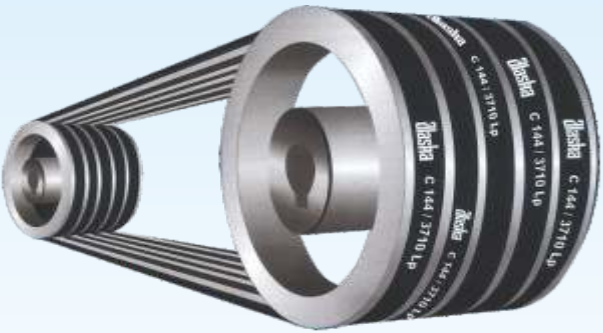

Banded (Wrapped)

Banded (Cogged)

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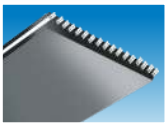

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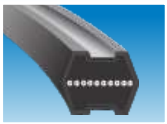

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FOREWORD

MOHINDER GUPTA
President, AIRIA

Education is fundamental right of every citizen and without education we can never dream of a Skilled India and Digital India. Technical Education Plays a vital role in human resource development of the country. It creates skilled manpower, enhances industrial productivity and improves the quality of life of its people.

India is emerging as one of the biggest global partner in manufacturing besides huge demand and consumption. It is on record that India is the Second largest consumer of Natural Rubber in the world and is the fifth largest Natural Rubber producing country globally. The turnover of the Rubber Sector (both tyre and non tyre)is INR 76,000 crores and employs about 30,00,000 (Thirty lakhs) individuals across various rubber sectors.

Majority of rubber products manufacturers (about 90%) belong to MSME category contributing approximately 40% to the GDP.

Inspite of all above facts & figures, MSME sector is still facing number of challenges, like sub-optimal scale of operation, technological challenge, changes in manufacturing strategies, skilled man power etc. Rubber industry is one of key supplier to Automobile Industry in India, meeting 60% of their demand for rubber components. In absense of quality education, imparting skill training, technology upgradation and there by to get skilled manpower, technology up gradation and technocrats, it seems difficult to win the global race towards development.

On behalf of the entrie rubber manufacturing MSME sector, we feel that there is large scope of better initiative towards education, training and skill development for the prospective students and employee. This indeed will empower the manufacturing sectors to make products in accordance to International Standards and attract the Govt. attention to create a skilled India environment and simplified regulations so as to create a more conducive environment for doing business. I have faith, that this process will gather momentum for growth of our country's economy.

All India Rubber Industries Association through different channel and various activities has been serving Rubber Sector for the last seven decades and is taking all possible initiatives to conduct global events, conferences, road shows, buyer-seller meets, delegation and circulation of news etc, to the members. Looking at the response received from Industries sector, we are encouraged to bring the first edition of book which contains information on rubber education, training, technology up-gradation and skill development so as to nurture and impart the knowledge to students, employees, employers and all others connected to the trade of rubber sector.

I am sure that our sincere efforts will be conducive and meaningful to all of you.

Wishing you all the success

FROM AUTHOR'S DESK

The publication of this book fulfills a dream that our President Shri Mohinder Gupta had some years ago. We wanted to write both comprehensive information of educational Institutions in India and elsewhere and the opportunities available for training and skill development in the field of rubber technology.

Finally, after about a year, the dream has come true, although we may have missed out opportunities available out of India on the skill development aspects.

We are constantly reminded of something Ken Langford, British National Racing team coach from 1964 to 1979, once told: "You can write down 90 percent of the way to the top, but the last 10% will never be written down until it's historical." The target of the book is the prospect who would like to enter in to the fascinating world of a resilient polymer – RUBBER.

We believe the book is unique in this aim. The reason, obviously, is the limited information available for those individuals who would want to enhance their knowledge and skills in rubber technology. Not only is the target of my book unique, but we also believe our philosophy of training is significantly different -- which only goes to show that there are many ways to approach the subject. The contents of the whole book have been sent by many people, their comments have contributed importantly to the book, and we owe a great debt to them.

First, we would like to thank Shri Mohinder Gupta – President – AIRIA. Much of the format of the book, the allocation of contents the sequential photographs, for example, resulted from his suggestions. We also owe a great debt to Shri Manu Patel, Dr. Mukhopadhyay, Dr. R.K. Mathan, Mr. Janakar, Mr. Vinod Simon, and if it were not for them, it would have been impossible for us to have compiled the data and opinions which form the basis of the book.

There are many others, who have helped, too, especially with their generous advertisements, the managing committee, whose constant support has encouraged us at every stage in compilation of the book.

Finally, we owe a great debt to our colleagues, who have pored over the book at all stages and made heroic efforts to prepare it. It always seems to happen to us that these books become "a fight to the finish", what with impossible deadlines to meet and impossible amounts of work to do.

Mr. Sandeep Sanyal
Manager – Education Trust

Dr. Sanjay Sanghvi
Secretary General

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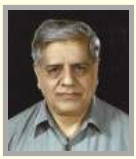

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RUBBER SCIENCE TECHNOLOGY

The rubber Industry has witnessed a rapid growth in last two decades. The yardstick of our growth is reflected by the consumption of rubber. The Industry has been fortunate to have rubber plantations and in near future availability of variety of synthetic rubber.

Like other industries, rubber industry is broad based consisting of rubber products manufacturers, raw material manufacturers, machinery manufactures and specialty technology training facilities, as availability of man-power at various level plays an important role, it assists our rubber industry to develop new products, innovations, raw materials, rubber machinery and testing equipment's.

We in our Rubber Industry need technological support for a wide range of industries, whether it is micro, small, medium and large sized rubber units. The technology training can also be at various levels such as Diploma, B-Tech, M-Tech and PHD.

Most of the courses offered are more on polymer science, and less on specialization in "Rubber Science and Technology". This basic training in rubber science & technology equips the candidate to primarily to convert Latex, Rubber / Elastomers into useful products.

Indian Rubber Industry is fortunate to have different levels of education in polymer science and technology. Our Institutes tend to cover Plastics, Rubbers and Fibers. The Institutes covering a broad spectrum is possible with intention to enable the candidate to find placement in Industry, irrespective of whether Rubber, Plastics or others. To us, the net result is loss of focus on rubber that our industry needs.

Today Consumers of Rubber Products both in India and abroad, demand quality consistency. Also innovation in product design, properties, etc. This is justified in the present scenario of the industry and also the time has come when rubber and plastics move closer as "THERMOPLASTICS" which covers processing of plastics and properties of Rubber Industry.

In addition, we also need to focus on;

i) Distance Education

ii) Short term specialty courses

iii) Education Abroad

The need of trained rubber technologists is recognized by our rubber industry and AIRIA. AIRIA has encouraged institutes to promote the studies in Rubber technology, by offering selective scholarships, Gujarat Government has encouraged plastic industry by providing land and possible similar encouragement be available from other states for establishing , a college only catering to courses in 'RUBBER SCIENCE TECHNOLOGY' only, which can be very useful to our Rubber Industry.

COOPERATION

Rubber Industry needs to cooperate with the educational Institutions; such Institutes are provided with names of Rubber Units, favorable to such need and located nearby.

EDUCATION IN RUBBER INDUSTRY forms the basis of growth as well structural transformation in manufacturing practice in Indian rubber industry.

The remarkable growth of our plantation industry has provided Natural Rubber, as the main raw material since 1950, supporting the growth of Rubber goods manufacture in India, Natural Rubber Production has grown 7-8% per annum, while synthetic rubber industry well established in 1962-63 with SBR plant, followed by an EPDM Plant, which closed down possible due to inadequate management.

Irrespective of that it did affect the rubber product manufacturing industry in India. Only Synthetic Rubber plants are in operation are PBR, SBR, NBR and soon to arrive 11R (Butyl)

Though Rubber Product manufacturing has grown at 7-8%, the gap in education in Rubber Technology has widened. Focused education and training will provide the innovations, quality control, consistencies of the rubber products being manufactured in India. The need of the hour is more so for small and medium size rubber units which are poised for high growth and exports.

CONCLUSION:-

We have to weigh out the purpose of the educational institutions to develop students with required knowledge and know how. Let the total quality education approach be provided by the teachers and adopted by students. In addition to this, let the management guide the students for job opportunities. Teachers must provide quality leadership, creating the confidence in students on quality of teaching and methodology adopted by the teachers. The curriculum should be designed to meet the need of Indian Rubber Industries.

Institutions offering courses in Rubber Science should be well equipped with processing, testing, (chemical & physical) facility, library and overall the ability of lecturers to deliver. The course should be preferably oriented towards Rubber Science and Rubber Technology.

Hence a need to have a College only catering to our need may be considered, to be supported by associations and its members. In short we should build world class institutions and which is absolutely possible, if all our synergies are channelized. It can be at various levels, such as Diploma, B-Tech, M-Tech, Ph.D etc..

MANU PATEL
CEO - AIRIA ET

ALL INDIA RUBBER INDUSTRIES ASSOCIATION (AIRIA)

All India Rubber Industries Association (AIRIA) is one of the oldest premiers Industries Association in the country, established in 1945.AIRIA is the largest not-for-profit non-Government body serving the rubber industry and trade. The Association has the objectives of safeguarding and promoting interests of the Indian Rubber products manufacturing Industry majorly non-tyres sectors, covering products, raw materials and machinery. AIRIA has over 1300 members spread all over the country and some Industry Associations as it's members. More than 95% of the industry units are in the MSME sector.

The Association has its Head office at Mumbai with 4 regional offices at New Delhi, Kolkata, Chennai and Mumbai and a Chapter office at Pune. New Chapter offices are opening in other regions.

AIRIA works closely with the Government of India on policy issues, enhancing efficiency, competitiveness and expanding business opportunities for industry through a range of specialized services and global linkages. It also provides a platform for sector specific consensus building and networking.

The Association's activities are guided and decided by a Managing Committee on a prescribed ratio as outlined in the Articles of Association. Regional Committees and a Chapter Committee comprising elected and nominated members decide on all local activities and functions of the region including local challenges of the industry.

AIRIA provides a platform for interaction between Indian entrepreneurs by organizing Buyers & Seller Meets, within India and rest of the world. It receives and sends delegation all over the globe. AIRIA assists in identification of partner for joint venture, location of consumers and suppliers as also provide help required in technical education and skilled manpower training.

AIRIA recognizes its members' contribution to the exports of Rubber Products, Rubber machinery and Raw Materials by giving "AIRIA Export Award" every year.

The K.M.Philip Award is biennially presented under the aegis of AIRIA for outstanding contributions to the Indian Rubber Industry by an individual.

EDUCATION TRUST

AIRIA had established Education Trust in the year 1989. The trust supports newer upcoming institution to draw students to take up courses in rubber technology and polymer science. This can be achieved by encouraging the new institutions to include a stream to generate / strengthen by providing

financial assistance through equipments, scholarships etc. It has created precedents, in diploma level course at Government Polytechnic at Bandra (GPM), Mumbai. B.Tech level at SRICT in Ankleshwar, Gujarat.

The Education Trust has taken up the activities of promoting education in the field of rubber technology as its main agenda. It is for the first time in history that AIRIA has gone all out for an Industry Academia Partnership. We have realized that this is the way forward to overcome the shortage of rubber technologists. AIRIA organizes training for entrepreneurs and supports institutes to carry out such training program. AIRIA-ET has fully renovated two new Rubber Technology Class Rooms in GPM Mumbai, with all the latest amenities. The next step is to move away from the classroom into improved chemical, mechanical and machinery lab.

AIRIA-ET has played a good role so far. We would now like to invite all the members to come forward and sponsor the repairs and maintenance of the machinery or sponsor New Machinery and equipments required for the Rubber Technology course and also participate in training and motivating the youngsters to take up Rubber Technology course.

This model of Industry Academia partnership is very common amongst other industries and must be promoted in each region. We request everyone to support this for the progress of the industry.

AIRIA is active in promoting education and training in the rubber industry at all levels the shop floor, under graduate and post graduate levels.

NATIONAL RUBBER CONFERENCE

National Rubber Conferences are held four times a year in every region and each evoked a positive and overwhelming response. This year's theme "Path to Future - Stride with NRC" is carefully drafted to be most befitting in the current scenario. Keeping the interest of Rubber industry, efforts are made to focus on major issues and challenges faced by the Industry in the global scenario.

The motive of organizing the Conference is to collectively discuss the major issues and challenges faced by the Rubber industry. The industry players get exposed to new ideas and enhance their knowledge through presentations made by eminent speakers from the respective industry and institutions. The overwhelming response of delegates and their deep involvement can be observed during the interactive sessions and presentations made, have been justifying the theme. NRC saw enhanced camaraderie amongst the members of the region thereby strengthening the regions.

With the recognition that NRC has received, we now have various rubber stakeholders come together with AIRIA to partner for the event. There are more focused programs for the rubber industry.

INDIA RUBBER EXPO (IRE)

The India Rubber Expo is a flagship event from AIRIA and is Asia's largest rubber expo. It made its debut in 2001 and has grown to be one of the most anticipated events in the rubber industry today. It is a biennial event, now in it's Ninth edition to be held at the Chennai Trade Centre in Chennai. Is a valuable platform for growth, exchange and collaboration.

The IRE offers a unique opportunity for Indian companies to meet and collaborate with overseas companies. An integral part of the thriving rubber industry, the IRE is a clear indicator of India's own position as the second fastest growing economy in the world. IRE 2011 was held in Chennai and it was ranked as one of Asia's largest rubber shows and one amongst the largest in the world.

More than a decade since its inception, the India Rubber Expo has grown - literally - from a mere 3000 square meters in 2001 to a whopping 25,000 square meters in 2015!

We are proud of our mission to make India the world's rubber destination of choice. A visit to the Expo will give you a sense of our vision and why we feel it is viable. India has a huge potential for growth in this field, thanks to a strong technically trained manpower base and many supporting institutions for training and testing. Furthermore, the robust growth of the nation itself coupled with free trade agreements have helped to accelerate momentum. The India Rubber Expo offers an unbeatable platform for all these elements to come together.

RUBBER INDIA AND R-I WEEKLY

"Rubber India", the official organ of the Association is regularly published by the first week of every month with steady increase in subscriber's lists and in advertisement revenue. The Journal, comprising technical as well as non-technical articles continued to cover important features namely 'News and Notes', 'Association News', 'Members news in brief', 'Financial News', Statistics, Raw Material prices etc. Important topics on growth and development of the Rubber Industry were highlighted through the Editorials of the journal. Some special statistical data are also given in Rubber India from time to time. Information on Central Excise, Import Duties, Notifications, Union Budget and Trade/public notices was disseminated to the members during the year from time to time, either through mail / circulars or through Rubber India and RI weekly. RI weekly sent on every Wednesday.

AIRIA - RUBBER SPORTS LEAGUE

AIRIA- Western region organized for the first time "Rubber Sports League-Sports for cause" in the history of AIRIA. It was held in Mumbai, and the surplus to be generated would be utilized for the upgrading the facilities for rubber course at Government Polytechnic Mumbai. The whole region came together for the event. The teams consisted of Members from different companies hence provided a great networking and team building exercise. The event is graced by honorary members and past chairmen and senior dignitaries from the rubber industry. The sports league is a successful event where the audience is students, employees of rubber industries and top dignitaries from the rubber industry.

VISION OF AIRIA:-

- Make Indian Rubber Industry most competent globally by ensuring synergy amongst the entire value chain.
- Make India one of the largest consumer and producer of Raw Materials and finished rubber products for domestic as well as exports.
- Create a Brand India Synonymous with Rubber and Rubber Products transforming the rubber industry into a global hub for sourcing, similar to the Indian IT Industry.

MISSION OF AIRIA:-

- To create an indigenous eco-system for the rubber sector in India to foster rubber and related products trade to tap the enormous potential that the sector offers.
- To help build state-of-the-art production capacities in upstream and downstream segments of rubber sector.
- To further develop the rubber and rubber product sectors in India for sustainable economic development and growth.
- To promote R & D in cutting edge technologies for the entire value chain.
- To create an atmosphere conducive to exports of rubber products and Raw Materials and continue the double digit growth for the next decade.
- To attract investments in rubber product and RM manufacturing and promote creation of jobs through all of the above.
- To increase per capita consumption of rubbers to match that of globally developed nations.
- To make the rubber industry technologically most advanced amongst the rubber consuming and rubber producing nations.

- To take a note of challenges and opportunities presented by the changing global environment particularly for NR production and sustenance.
- To liberalize controls and restrictions so that different segments of the rubber industry are enabled to perform in a greater globally competitive environment.
- Consider phasing out of quantitative restrictions and lowering tariff levels for an integration of the entire rubber sector and identify and have a focused approach to maximizing opportunities in new products and materials.
- Enable the industry to build a world class state of art manufacturing capabilities in conformity with global environmental standards.
- Sustain and strengthen knowledge, skills and capabilities of rubber technologists, planters, workers, supervisors and enrich human resource skills and for this purpose to revitalize the institutional structure.
- Make IT an integral part of the entire value chain thereby facilitating the industry to achieve international standards in terms of quality, design and productivity.

We are looking at a bright future, with increasing volumes the Indian rubber industry is expected to grow at over 8% per annum this decade. the per capita rubber consumption of rubber in India is only 1.2 kg against 14 kg in the developed world.

EMAIL: info@allindiarubber.net

For any query or membership related issues please contact the secretariat:-

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Members of Managing Committee present at AGM 2014

RUBBER

Think of rubber and you probably think of elastic bands, car tires, or pencil erasers. But this super-stretchy material actually finds its way into tens of thousands of different products-everything from rubber stamps and waterproof shoes to surfing wetsuits, swimming caps, and dishwasher hoses. Rubber, which has been commonly used for over 1000 years, once came entirely from natural sources; now rubber products are just as likely to be made artificially in chemical plants. That's largely because we can't produce enough natural rubber to meet all our needs. And that, in turn, is because rubber is so fantastically useful. Let's take a closer look at one of the world's most amazing materials!

Raw rubber waiting to be made into tires at Red River Army Depot in Texarkana, Texas. Photo by Cherie Cullen courtesy of Defense Imagery.

Rubber bands are a very familiar everyday use of latex rubber

What is rubber?

When people talk about "rubber", they don't usually specify what kind. Although natural rubber and synthetic rubber are similar in some ways, they're made by entirely different processes and chemically quite different.

Guayule: one of many plants from which rubber can be made.

Natural rubber

Natural rubber is made from runny, milky white liquid called **latex** that oozes from certain plants when you cut into them. (Common dandelions, for example, produce latex; if you snap off their stems, you can see the latex dripping out from them. In theory, there's no reason why we couldn't make rubber by growing dandelions, though we'd need an awful lot of them) Although there are something like 200 plants in the world that produce latex, over 99 percent of the world's natural rubber is made from the latex that comes from a tree species called Hevea brasiliensis, widely known as the rubber tree. This latex is about one third water and one third rubber particles held in a form known as a *colloidal* suspension. Natural rubber is a polymer of isoprene (also known as 2-methylbuta-1,3-diene) with the chemical formula $(C_5H_8)n$. To put it more simply, it's made of many thousands of basic C_5H_8 units (the monomer of isoprene) loosely joined to make long, tangled chains. These chains of molecules can be pulled apart and untangled fairly easily, but they spring straight back together if you release them-and that's what makes rubber elastic.

Synthetic rubbers

Synthetic rubbers are made in chemical plants using petrochemicals as their starting point. One of the first (and still one of the best known) is **neoprene** (the brand name for polychloroprene), made by reacting together acetylene and hydrochloric acid. **Emulsion styrene-butadiene rubber (E-SBR)**, another synthetic rubber, is widely used for making vehicle tires.

In 1939, American inventor Charles Goodyear (1800-1860) developed the vulcanization (heat-treatment) process that makes rubber harder and more durable. He'd spent many years as a struggling inventor, trying desperately to turn rubber into a useful product, when he accidentally dropped some rubber on a hot stove and watched it "cook" itself into a much more useful form: the black, vulcanized material most of us know as rubber to this day. Despite developing one of the most useful materials of all time, Goodyear never made much money from his invention and died deeply in debt. Fortunately, his name lives on in the Goodyear tire company-and his superb contribution to materials technology has never been forgotten. Photo courtesy of US Library of Congress.

HOW IS RUBBER MADE?

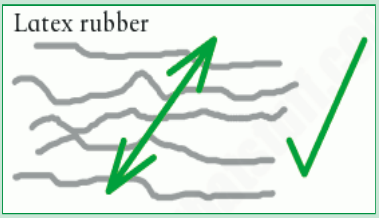
It takes several quite distinct steps to make a product out of rubber. First, you have to gather your latex from the rubber trees using a traditional process called **rubber tapping.** That involves making a wide, V-shaped cut in the tree's bark. As the latex drips out, it's collected in a cup. The latex from many trees is then filtered, washed, and reacted with acid to make the particles of rubber coagulate (stick together). The rubber made this way is pressed into slabs or sheets and then dried, ready for the next stages of production.

By itself, unprocessed rubber is not all that useful. It tends to be brittle when cold and smelly and sticky when it warms up. Further processes are used to turn it into a much more versatile material. The first one is known as **mastication** (a word we typically use to describe how animals chew food). Masticating machines "chew up" raw rubber using mechanical rollers and presses to make it softer, easier to work, and more sticky. After the rubber has been masticated, extra chemical ingredients are **mixed** in to improve its properties (for example, to make it more hardwearing). Next, the rubber is squashed into shape by rollers (a process called **calendering**) or squeezed through specially shaped holes to make hollow tubes (a process known as **extrusion**). Finally, the rubber is **vulcanized** (cooked): sulfur is added and the rubber is heated to about 140°C (280°F).

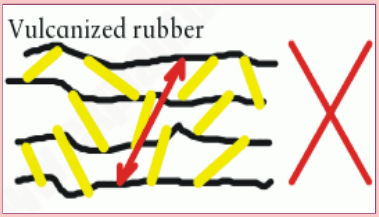
HOW DOES VULCANIZATION MAKE RUBBER STRONGER?

Rubber-the kind you get from a tree-starts off as white and runny latex. Even when it's set into a product, this latex-based, natural rubber is very squashy, pretty smelly, and not very useful. The kind of rubber you see in the world around you, in things like car and bicycle tires, is vulcanized: cooked with sulfur (and often other additives) to make it harder, stronger, and longer lasting.

So what's the difference between raw, latex rubber and cooked, vulcanized rubber? In its natural state, the molecules in rubber are long chains that are tangled up and only weakly linked together. It's relatively easy to pull them apart-and that's why latex rubber is so stretchy and elastic. When latex is vulcanized, the added sulfur atoms help to form extra bonds between the rubber molecules, which are known as cross-links. These work a bit like the trusses you see on a bridge, tying the molecules together and making them much harder to pull apart.



Natural, latex rubber is easy to pull apart because the long polymer molecules it contains (made from carbon and hydrogen atoms) are only weakly linked together.



When natural rubber is cooked with sulfur, the sulfur atoms form extra cross-links (shown here as yellow bars) "bolting" the molecules together and making them much harder to pull apart. This process is called vulcanization and it makes the strong, durable, black rubber we see on things like car tires.

What do we use rubber for?

Rubber is elastic and water-resistant, traps air (so it floats), and doesn't conduct electricity. In its unprocessed form, it's used in such things as adhesives, contraceptives, and latex balloons. Vulcanized rubber is harder, less elastic, and more durable and has many more uses, from vehicle tires to hose pipes and from artificial hearts to the waterproof gaskets that seal the doors on washing machines. Tires are still the biggest single use of rubber in the world. About half of all the world's rubber ends up wrapped around the wheels of cars, bicycles, and trucks!

Half of all rubber is used in vehicles tires. The rubber in this tire has been vulcanized to make it extremely hard-wearing.

THE MANY USES OF RUBBER

Rubber, in one form or another has been used since the times of old, evidence of its use going back 2,000,000 years or more. In those days the substance was derived naturally from the rubber tree. Individuals would then use it to make balls, and to waterproof handmade buckets, pails and more. As time went on more and more uses for rubber was discovered inspiring the invention of synthetic rubber because the natural alternative could not keep up with the growing demand. Every year an approximated 4 million tons of natural rubber and 7 million tons of synthetic rubber are produced to make more than 50,000 different products that we use on a daily basics worldwide.

Natural rubber production begins with the tapping of the matured rubber trees of South East Asia and Africa. Workers tap the trees by making an incision which cause the slow flow of the milky fluid called latex, after enough of the latex is collected in pails the water is then removed from it and the latex is then turned into raw rubber. There are approximately twenty different types of synthetic rubber used today including silicone rubber,acrylic rubber and butyl rubber. the production of this type of rubber consists of the adding of materials like petroleum, crude oil and different types of gases.

Today, rubber is as widely used as wood and this is largely due to its beneficial proprieties like strength, long lasting, water resistance and heat resistance all these benefits makes this material perfect for tire production, in fact a large percentage of rubber production goes into the automotive industry. Other benefits like being non slip, soft, durable, resilient makes this material the first choice for playground equipment, shoes, mats, flooring, healthcare supplies, household supplies, balls, toys and thousands of other rubber products. Rubber comes in a large variety of colors, styles and textures making it extremely diverse. Used rubber tires are often recycled to make other items like mulch, shoes, bags, jewelry and coats. It is safe and reliable and seen as a valuable material by many.

WHERE DOES RUBBER COME FROM?

As its name suggests, the rubber tree Hevea brasiliensis originally came from Brazil, from where it was introduced to such countries of the Far East as Malaysia, Indonesia, Burma, Cambodia, China, and Vietnam. During World War II, supplies of natural rubber from these nations were cut off just when there was a huge demand from the military-and that accelerated the development of synthetic rubbers, notably in Germany and the United States. Today, most natural rubber still comes from the Far East, while Russia and its former republics, France, Germany, and the United States are among the world's leading producers of synthetic rubber. The world's largest single source of latex rubber is the Harbel Rubber Plantation near Monrovia in Liberia, established in the 1920s and 1930s by the Firestone tire company.

A BRIEF HISTORY OF RUBBER

- 1000CE: Indians living in Central and South America have learned how to made waterproof clothes and shoes using latex from rubber trees. They call rubber trees *"cahuchu"* (crying wood), which is why the French still call rubber caoutchouc (pronounced "cow-chew") today.
- 1731: During an expedition to South America, French explorer **Charles Marie de La Condamine** (1701-74) sends back samples of rubber to Europe, prompting intense scientific interest.
- 1770: The discoverer of oxygen, English scientist **Joseph Priestley** (1733-1804), finds he can use pieces of rubber to erase the marks made by pencil on paper. In England, erasers are still widely called "rubbers" today.
- 1791: Englishman **Samuel Peal** develops a method of waterproofing cloth with a rubber solution.
- 1818: Scottish medical student **James Syme** (1799-1870) uses rubber-coated cloth to make raincoats.
- 1823: Englishman **Charles Macintosh** learns of Syme's discovery, refines it, and patents it, earning fame and fortune as the inventor of the rubberized, waterproof coat. Waterproof coats have been known as Macintoshes ever since.

- 1839: American inventor **Charles Goodyear** (1800-1860) accidentally discovers how to vulcanize rubber after dropping a piece of the material (which has been treated with sulfur) onto a hot stove.
- 1876: Intrepid English explorer **Sir Henry Wickham** (1846-1928) smuggles thousands of seeds from the rubber treeHevea brasiliensis out of Brazil and back to England.The English grow the seeds at Kew Gardens just outside London and export them to various Asian countries, establishing the giant plantations that now supply much of the world's rubber.
- 1877: US rubber manufacturer **Chapman Mitchell** develops the first commercial process for recycling rubber from scratch.
- 1882: **John Boyd Dunlop** (1840-1921) invents the pneumatic (air-filled) rubber tire. The development of gasoline-powered cars with rubber tires leads to a huge increase in the need for rubber.
- 1883: US chemist **George Oenslager** (1873-1956) develops a much faster way of vulcanizing rubber using chemicals called organic (carbon-based) accelerators.
- 1930: A team of US chemists at the DuPont company, led by **Wallace Carothers** (1896-1937), develop a revolutionary synthetic rubber called polychloroprene and sold as neoprene. (Shortly afterward, the same group developed an even more revolutionary material: nylon.)

RUBBER TREES

LATEX: LATEX DRIPPING FROM A TAPPED RUBBER TREE

RUBBER TREE: EXTRACTION OF LATEX

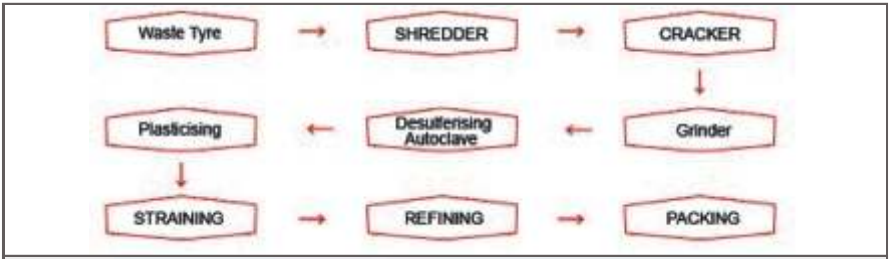
RUBBER: LATEX PROCESSED INTO RUBBER SHEETS

RUBBER

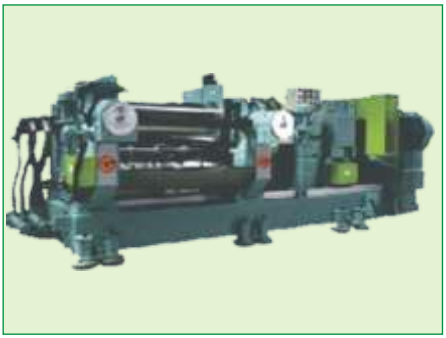
RUBBER SHEETS

SYNTHETIC RUBBER

RECLAIM RUBBER



Some Commonly Used Rubber Machinery



Rubber Mixing Mill

Extruder

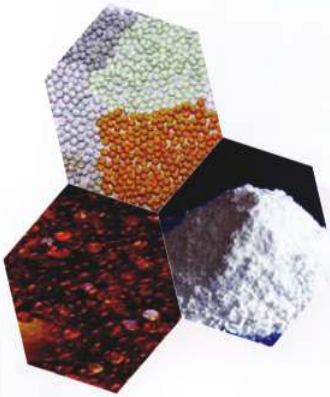
Rubber Calander Machine

Rubber Moulding Hydraulic Press

Vulcaniser/ Auto Clave

Fair Deal Polychem LLP

The Name Inspires Trust



INTRODUCTION

We are the Leading Marketing Agent/ Trading House in North India for Rubber, Rubber Chemicals and Reinforcing Fillers.

We are catering to the needs of Tyre / Non Tyre (Footwear, Rice Roller, Rubber Automotive Components, Belting and Cables), Cosmetics, Food, Toothpaste and Feed Industry for last more than 40 Years.

We Represent:-

- M/S KOREA KUMHO PETROCHEMICALS CO. LTD.
  (NORTH INDIA S.INDENTING AGENTS) (SBR / NBR / PBR / 6PPD KUMONOX-13)
- M/S KUMHO POLYCHEM CO. LTD.
  (NORTH INDIA S.INDENTING AGENTS) (EPDM)
- M/S MADHU SILICA PVT. LTD. (PPT. SILICA)
- M/S GODREJ INDUSTRIES LTD.
  (FATTY ACIDS/ OLEIC ACID/ FATTY ALCOHOLS/ SURFACTANTS / GLYCERINE)
- M/S PMC RUBBER CHEMICALS INDIA PVT. LTD
  (ACCELERATORS/ ANTIOXIDANTS/ ANTIOZONANTS / RETARDERS/ PEPTISER)
- M/S HIMADRI CHEMICALS & INDUSTRIES LTD. (CARBON BLACK)
- M/S CAMPHOR & ALLIED PRODUCTS (CAPOLYTE RESIN / PINE TAR)
- M/S RISHIROOP POLYMERS PVT. LTD. (CHLORINATED RUBBER)
- M/S HARI NARAYAN INDUSTRIES (ZINC OXIDE)

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E-mail:- anshum.sarin@fairdealpolychem.com

Head Office Address : Nirmalyog, 389, 2nd Floor, Deepali, Pitampura, Delhi-110034.
Branch Office Address : Plot No.103, Hall No.B, Sector-24, Faridabad, Haryana.
Our Website : www.fairdealpolychem.com

PRECITEX WORLD

PRECITEX is the undisputed leader in the domestic Indian market. That is not all. It is also the most preferred Indian brand of aprons and cots around the world, exported to more than 40 countries across the continents.

That is why we keep winning top export awards year after year. It is a testimony to the world class quality of PRECITEX products that go a long way in enhancing the productivity, profitability, and competitiveness of our highly demanding quality conscious customers.

PRECITEX WORLD CLASS APRONS & COTS

PRECISION RUBBER INDUSTRIES PVT. LTD.

(An ISO 9001:2000 Company)
201 A, Poonam Chambers, Worli, MUMBAI 400 018.
Tel: 91 22 40766444 / 40049750 Fax: 91 22 66605382 / 66605383
E-mail: precitex@vsnl.com Web Site: www.precitex.com

STATUS OF THE INDIAN RUBBER INDUSTRY

PREAMBLE

In the changing world economic scenario, Asian countries and particularly India is recognized as the fastest growing stakeholders of the rubber industry. For instance out of 10 highest rubber consuming countries in the world seven belong to Asia pacific countries and India is ranked as fourth largest rubber consumer in the world.

ADVANTAGE INDIA

india, with an extensive plantation sector, availability of basic raw materials in abundance, availability of economical manpower, as also technically skilled manpower and a vast domestic market is ideally poised to supplement and complement overseas manufacturers through joint collaborations and technical exchange to contribute substantially to the world trade of rubber products. india is the second largest populated country and the largest democracy with population over one billion. it is the biggest source of both un-skilled & skilled manpower to the world. today, our country is highly self-reliant not only in most of the raw materials but also in food grains, science & technology, and education and so on.

as per united nations 2011 study, India will have the highest increase in working age population (15-64 years) globally during the period 2011-2020 and this will be a source of competitive advantage.

OPEN WINDOW POLICY

Since liberalization of Indian economy, open window policy of the government of India for setting-up collaborations and joint ventures in India and single window automatic route for foreign direct investment etc., India has become the hottest destination ever for this activity. Several organizations from across the continents have already set-up mega shops in this country.

The distinct advantages Indian rubber goods industry enjoys are:

CONDITION	BENEFITS
RESOURCES	India has tremendous resources with respect to rubber raw material, manpower, machineries, test houses, rubber chemicals, carbon black, zinc oxide etc. it has the world's widest rail network and well connected to the global market by extensive air and sea links.
TECHNOLOGICAL MATURITY	The Indian rubber industry has reached the world class standards of sophistication with world class equipments.
ESTABLISHED INDUSTRY BASE	There are around 4800 units spread across the country producing products with a huge product range varying from tyres, belting, cables, hoses and molded products.
PRODUCT ACCEPTABILITY	the Indian products have reached the global standards with far many organization have gone for quality certification such as ISO 9000, 14000, QC & TQM etc.
STANDARDIZATION	India has its own international standards institute.(bis)
TESTING & RESEARCH CAPABILITY	It has several test centers of international repute and educational institutes. it also has research laboratories such as ncl, pune, ari, pune, irmra-mumbai, hasetri, jk gram etc. the institutes such as iit-kharagpur, uict-mumbai, rubber research institute of India (rril) etc. have world class research centers in polymers.

INDIAN RUBBER GOODS INDUSTRY

The Indian rubber goods manufacturing industry established in 1921, has grown to occupy being among the largest producer and consumer of natural rubber. it is also the one of the largest consumer of natural rubber and synthetic

rubber together. Even then, India's per capita consumption of rubber is low at 1.16 kilos, as against 12-14 kilos in advanced economies and 3 kilos is the world average. But consumption is progressively increasing at a faster rate.

With over 4800 rubber goods manufacturing units including large and small scale units, with a turnover of around inr 78500 crores , manufacturing 35000 items of rubber products, employing 450 hundred thousand personnel including 25000 technically qualified personnel, Indian rubber industry plays a core sector role in the Indian national economy. India produces wide range of products to cater to every conceivable field. India also has a large sector for producing important raw materials for the rubber goods manufacturing industry. This encompasses natural rubber, synthetic rubber, fibres, carbon black and so on.

India export rubber products to all over the world and its total exports during 2013-14 was to the tune of INR 164000 millions (uUSD 2568 million) as against INR 148000 millions (USD 2318 million) during 2012-2013, registering over 15% growth in three years.

INDIAN TYRE INDUSTRY

The Indian tyre industry is doing reasonably well as compared to other rubber goods due to economy of scales, technology, skilled manpower etc. availability and price of nr, notwithstanding. The compounded annual growth rate is 18% during the last decade.

There are 43 tyre companies having 58 tyre plants located allover India. 23% of domestic production of truck and bus tyres is exported. with the entry of several world majors such as Toyota, Volvo, Benz, BMW, Ford, General Motors, Honda, Hyundai, Mitsubishi, Skoda, Suzuki, Yamaha during the last decade it set a scorching pace and growth resulting in big tyre demand.

INDIAN AUTOMOBILE INDUSTRY

Indian automobile industry and a host of global auto-makers are now using India as a production base either directly or through joint ventures. Major international automobile companies are increasingly harnessing India as a production base, either directly through foreign or direct investment or

indirectly by contracting with firms operating in India. Correspondingly, the sales of both passenger cars and commercial vehicles registered a healthy growth. Since 65% of rubber is directly or indirectly used by the automobile industry, the steady growth in the automobile sector directly reflects on the growth of the Indian rubber industry. Top ranking automotive companies such as GM, ford, Toyota, Honda, Daimler-Chrysler, Skoda and others are now in operation in India and demand consistently high quality components and the Indian manufacturers are able to conform to high quality standards and deliver the goods against international competition.

GROWTH IN OTHER SECTORS

The growth of automotive sector will eventually fuel the growth of the rubber industry. This is because, as it is seen earlier, the domestic industry has now put in sufficient efforts to make it capable of not only delivering world class products but also has become highly competitive in the global market. This is also reflected in the actual figures where one can see a clear surge in the auto component production during the recent years. The non-tyre rubber products are:

1	AUTOMOTIVE RUBBER COMPONENTS
2	RUBBER HOSES & BELTINGS OF ALL TYPES
3	CYCLE TYRES
4	PHARMACEUTICAL AND MEDICAL APPLIANCES MADE OF RUBBER
5	RUBBER SHEETINGS
6	LATEX RUBBER PRODUCTS AND DIPPED GOODS INCLUDING CONDOMS GLOVES AND RUBBERIZED FABRIC
7	RUBBER FOOTWEAR/SHOE SECTOR
8	TECHNICAL MOULDED RUBBER GOODS
9	BATTERY BOXES, CABLES AND WIRES CAMELBACK AND OTHER MISCELLANEOUS ARTICLES OF RUBBER.

INDUSTRY'S OUTLOOK

Given the necessary support, india can emerge as the second largest manufacturer of rubber product world wise, second only to china by 2020. The average cagr is accelerating to 8% in the course of normal downstream demands within the domestic sectors of the economy that use rubber products. Domestic demand can in fact increase to 10% due to the rapid growth of the automotive sectors and some other segments, which have high potential for growth. This coupled with an export led growth could lead to a consolidated growth between 12 and 16% sustainable till 2020. Indian rubber products are well accepted all over the world and the industry has achieved a compounded export growth of 20 to 25% during the last ten years. Opportunities exist across all sectors of the rubber industry. However the growth projection depends on reasonable input cost and the global rubber industry is free from any recession due to high crude prices presently affecting the world economy.

The boost to the production of natural rubber came from the rubber board of india, backed by rubber research institute of india, having over 100 scientists working to improve the yield and quality of rubber produce, who not only educates the farmers but also encourage them to grow more and more rubber. The efforts have resulted that india is having the highest yeild of natural rubber per hector occuping the top spot.

OTHER RAW MATERIALS

The other major raw materials related to the tyre industry such as carbon black, tyre cord, rubber chemicals also grew parallel along with the nr industry in india and today these capacities are substantial. India today is also among the largest manufacturer of reclaim rubber in the world.

INTEREST OVERSEAS

In respect of rubber goods, ventures by advanced countries, is already home to some of the world's largest companies in the rubber industry through direct investment & technical tie-ups which includes amongst others: gates india, phoenix yule, michelin, continental ag, bridgestone, goodyear, bnw passenger

car project, bosch group- automotive components, man nutzfahrzeue ag, dow corning, lord, motherson-sumidelphi, parkman, haniffin, freudenburg, vistion, rubfil sdn bhd., strategies prod. Malaysia strategies prod. Malaysia, reverte malaysia, ansell australia, ardl usa, lord usa, r1 international singapore, cabot, degussa, tung yu hydraulics, sumitomo corporation, ge bayer silicon, rohm & hass, mclube asia, mahindra intertrade, sartomer, sungjin machinery co. Ltd., & forbes marshall.

TECHNICAL EDUCATION

The indian rubber industry enjoys a wide network of technical education imparted through various universities / institutes spread all over the country. The rubber industry also has its own associations and research institutes such as all india rubber industries association (airia), indian rubber institute (iri). Iri has also a tie up with american chemical society (acs) rubber division, all india tyre manufacturers association (atma), rubber board of india, rubber research institute (rri) and several others.

JOINT VENTURE

Due to high incidence of labour cost, rubber industry in europe engaged in manufacture of low-tech rubber products by and large are vacating the low-tech areas and switching over to high-tech sectors. In the process lot of used machinery are available in europe which either remain idle or put up for sale as second hand machinery. Re-location of these plants to india and other asian countries will be a better proposition for such manufacturers as for any labour intensive products, india is in an advantageous position vis-à-vis europe so far as labour cost is concerned. The other alternate plan of action for such manufacturer in europe or elsewhere is to collaborate with indian manufacturers to instal such machineries in their factories for manufacture of rubber products of international standards through technology transfer with buy-back arrangements. The cost of export of such second hand machinery can be set-off against their equity participation.

CONCLUSION

Asia is emerging as the main global player in the field of rubber industry. Almost 90% of world nr production is grown in this region. Out of 10 highest nr consuming countries in the world 6 belong to asia. Closer interactions among the asean countries would substantially help in complimenting and supplementing each other and thereby help sizeable expansion of global trade of all rubber related products, raw materials and machinery. It is therefore imperative to explore possibilities of promotion of two-way trade between india and other asean rubber industry, which may be initiated on the following lines:

(a) industries in these countries can compliment and supplement india by developing two-way trade for supply of finished rubber products and raw materials and machinery.

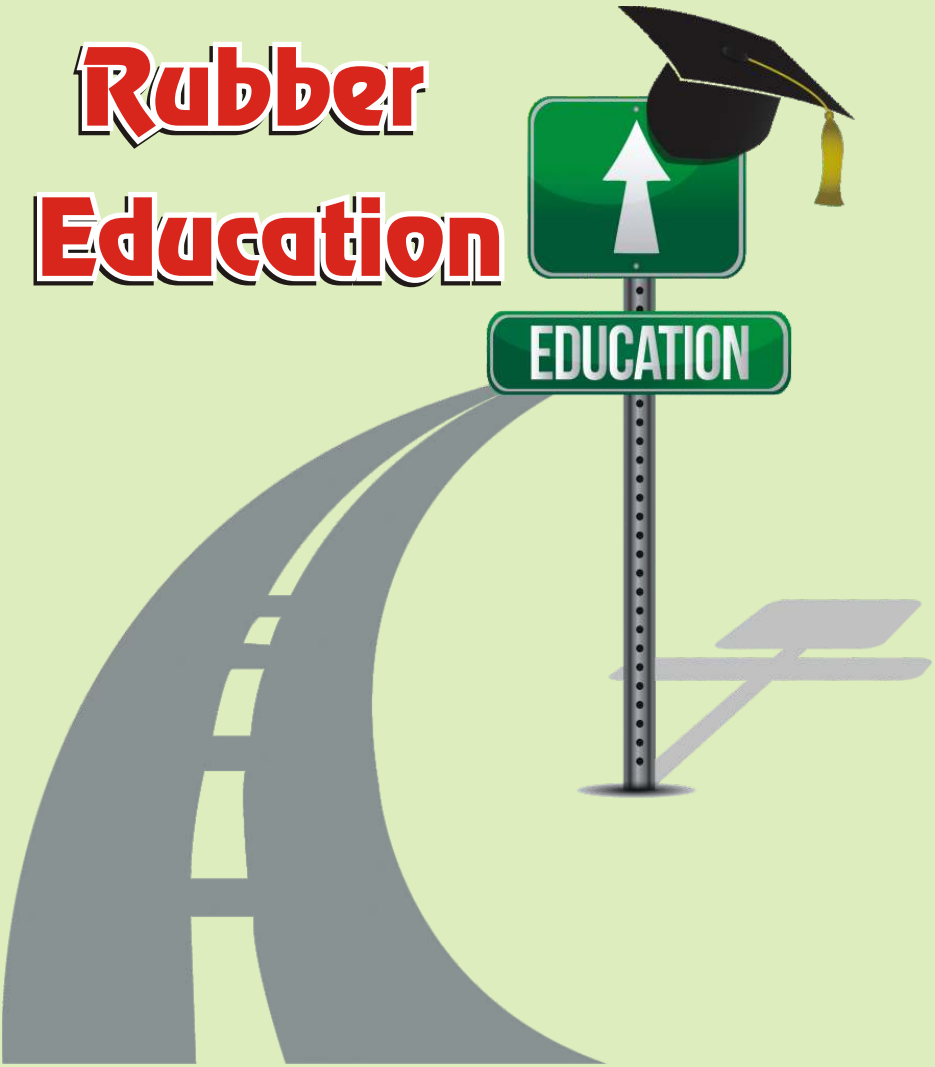
(b) there could be a regular technical exchange between these countries to its mutual benefit.

(c) similarly collaboration and investments either way are most welcome.

(d) development of third country exports through collaboration is possible.

All the rubber associations in the countries can closely work together through exchange of notes, dissemination of information and so on for the mutual benefit of the rubber industry in general.

About Rubber Education



Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
M. Tech. in Polymer Science & Technology	East	Tezpur Univers-ity	Postal Address Tezpur University Napaam, Tezpur Sonitpur, Assam (India) Pin - 784 028	Central University	10	2 Years	B.Tech/ B.E in Polymer Science & Techn-ology/ Fiber Science & Tech-nology/ Rubber Technology/ Plastic Techn-ology / Chem-ical Engine-ering, M.Sc. in Chemi-stry/ Polymer Science/ Applied ChemistrY from a recognized institution with 50% or equivalent grade.Candidate with valid GATE score will get prefer-ence	Prof. Niranjan Karak Phone: +91 3712 267007/8/9 (Extn 5051) Fax:+91 3712867005/6 Email: nkarak@tezu.ernet .in	Industrial Polymers , Polymer Characterization and Analysis, Polymer Reaction Engineering and Reactor Design, Polymer Synthesis and Analysis Laboratory, Polymer Rheology & Morphology, Polymer Processing and Testing Laboratory	http://www.tezu.ernet.in
BE - Chemical and Polymer Engineering & M.Tech - Polymer science and technology	East	BITS, Mesra	Birla Institute of Technology, Mesra Ranchi, Jharkhand 835215 PABX: +91 651 2275444/2275896 Fax: 0651 2275401	Deemed University	B. Tech - 52 , M. tech -21	4 years for B.E. & 2 yrs for M. Tech.	Undergraduate for B.E. and Graduate or B.Tech for M.tech	Dr. (Mrs.) M. Mukherjee Dept Head E-mail: mmukherjee@bitm esra.ac.in,chemical .polymer@bitmesra .ac.in Tele Fax : 06512276053	Polymer Materials Technology, Polymer Processing, Polymer Product Design and Development to serve industries involved in polymer manufacture, polymer processing and conversion industries, polymer processing machinery manufacturing industries and advanced level research in the field of polymer science and engineering	http://www.bitmesra.ac.in

Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
B.Tech in Polymer Science and Technology (PST) & M.Tech in PST + PhD (Tech) in PST	East	Univers-ity of Science & Techno-lgy, Kolkata, Depart-ment of Polymer Science Techn-olgy	92, A.P.C. Road Kolkata-700009 Contact no. 033-23508386 (extn: 289)	Kolkata University	B-Tech : 30 M-Tech 18 and PHD 8	B - Tech : 3 Years and M-Tech 2 Years	As per Merit with relevent qualifications	Prof: Bidyutbaran Konar Email : bidyutbarank@-yahoo.com dbbkpoly@caluniv.ac.in Tel: 033-23508386 (extn: 283)		http://www.caluniv.ac.in/
Rubber Technology M.Tech. and Ph.D in Rubber Technology	East	Indian Institute of Technol ogy, Kharg-pur	Indian Institute of Technology Kharagpur Kharagpur India - 721302 +91-3222-255221 FAX : +91-3222-255303	Central University	M.T ech and Ph. D	2 yr	Graduate or B.Tech for M.Tech. M.Sc or M.Tech for Ph.D	Head Prof. D Khastgir Phone (Head's chamber) : +91-3222-282292 Office : +91-3222-282291 Phone (Chamber) : +91-3222-283192 Phone (Residence) : +91-3222-283193, +91-3222-278161 Email : khasdi @ rtc.iitkgp.ernet.in		http://www.iitkgp.ac.in/academics/?page=acadunits&&dept=RT
BE - Rubber Technology	East	ME - Rubber Techno-logy	L. D. College of Engineering Ahmedabad 380 015, India Email : ldce_ciiilp@yahoo.com Phone : +91-79-26302887 (Direct): +91-79-26306752, 26300735 Ext. 1000	Gujarat Technolo gical University	30	4 years	12th Science	Prof. M.N. Patel, Principal Fax No. (079) 26304105 Phone No. (079) 26302887, Email: mnp_gec@yahoo.com	Tyre and Tube Technology Polymer Reaction Engg Fertilizer Technology, Petroleum Refinery & Petrochemicals Rubber Technology Testing Lab Process Equipment Design, Rubber Equipment Design and Drawing, Plastic Equipment Design and Drawing	http://ldceahd.org/
ME - Rubber Technology					18	2 years	B.Tech. or B.E			

Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
B.Tech - Polymer technology	West	SSE College of engineering and techno-logy, Akola	Babhulgaon ((Jh) N.H. No-6,Nagpur Road, AkolaDistrict, AKOLA. PIN : 444104 .MAHARASHTRA STATE. STD Code : 0724 Phone No: 2259024, 225069 e-mail : principalcoeta@gmail.com	Amravati University	40	4 years	HSC & CET	Prof. Dr. S.K.Deshmukh, Principal 0724 2259069 (O), 2458484 principalcoeta @ gmail . Com		www.coeta.org
B.Tech (Polymer Technology) M.Tech (Polymer Technology	West	Institute of Chemic-al Technol ogy, Mumbai.	Nathalal Parekh Marg, Matunga MUMBAI - 400 019 INDIA Telephone: (91-022) 3361 1111/ 2222; Fax: (91-022) 3361 1020 E-mail: admission@ictmumbai.edu.in, admission.ict@gmail.com	Deemed University		B.Tech 4 Years & M Tech 2 Years	Undergraduate for B.E. and Graduate or B.Tech for M.tech	Prof. P.A. Mahanwar Designation :Head of the Department Phone No. :+91-22- 3361 2401 Ext. No. :2411 E-Mail: pa.mahanwar@ictmumbai.edu.in		www.ictmumbai.edu.in
B.Tech. in Chemical Technology	West	Shroff S R Rotary Institute of Chemic-al Technol ogy	Block No. 402, At & P – Vataria Tal – Valia, Dist–Bharuch, Gujarat – INDIA	AICTE Approved and GTU Affillated	60 Seats	4 Years	HSC and appropriate Entrence test	Dr. Shrikant J. Wagh Principal Phone No.: 9712177799, EXT:102 Mo.: 9727745875	A) Polymer & Rubber Technology B) Pharmaceutical Technology C) Glass & Ceramic Technology D) Dyes & Pigments Technology	http://srict.in

Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
BE (Polymer Engineering) M.E. (Polymer Engineering)	West	Maharashtra Institute of Technology (MIT), PUNE, Department of POLYMER ENGINEERING	S.No.124, Paud Road, Kothrud,Pune 411038Maharashtra INDIAPhone: +91-20-3027 3400, +91-20-3027 3459Fax: 91 020 25442770Email : mit@mitpune.com	University of Pune	60 10	4 years 2 years	10 + 2 (H.S.C.) + CET I AIEEE BE / B. Tech	Head of Department Prof. (Dr.) Pramod S. Joshi ; Phone number 91-020-30273496 (O)Fax number 91-020-25442770Email pramod.joshi@mitpune.edu.in	Polymer Chemistry, Polymer Materials, Polymer Rheology, Mould and Die Design, Polymer Processing, Surface Coatings and Adhesives, Specialty Polymers, Rubber Technology, Processing and Mechanics of Composites, Polymer Physics and Characterization, Production Planning and Control, Fiber Technology, Polymer Blends as well as subjects related to Computer Modeling and Simulation.	http://www.mitpune.com
Rubber Technology,Rubber Diploma Course	West	Government Polytechnic , Mumbai	49, Kherwadi, Ali Yawar Jung Marg, Bandra (East) Mumbai 400051	Autonomous Institute of Govt of Maharashtra	30	3 Year	HSC or Diploma passed	Dr Hemant P Taskar Principal, Email: htaskar@yahoo.com		
B.Tech in Plastics and Polymer	West	Laxminarayan Institute of Technology, Nagpur	Laxminarayan Institute of Technology Rashtrasant Tukadoji Maharaj Nagpur University Amravati Road, Opposite Bharat Nagar, Nagpur	Nagpur University	12 Seats	4 Years	10+2 with minimum merit and Entrance Test, AIEEE	Phone: 2561107 Fax: 2531659 Email: rajumankar@rediffmail.com yenkiemskm@rediffmail.com		http://nagpuruniversity.org/litnagpur/#

Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
M. Tech. in Polymer Science & Technology	North	IIT Delhi	Hauz Khas, New Delhi-110 016, INDIA Email:webmaster[at]admin.iitd.ac.in	Central University		2 years	B.E/B.Tech	Dr Josemon Jacob J, emailid: jacob@polymers.iitd.ernet.in , Prof. veena Chaudary email: veena@polymers.iitd.ac.in	Polymer chemistry, Polymer Physics, Polymer Processing, Polymer testing and properties, Polymer reactions…etc	http://www.iitd.ac.in/programs/master/inter_mtech.html
M.tech (Polymer technology)	North	Delhi College of Engineering	Delhi Technological University, Formerly Delhi College of Engineering, Shahbad Daulatpur, Main Bawana Road, Delhi-110042.India	Delhi Technological University	20	2 years	The candidate should have passed B.E./B.Tech. Examination in any branch of Engineering with a minimum of 60% marks in aggregate from a recognised University	Dr. A.P. Gupta Email:- argupta@dce.ac.in		http://www.dce.edu/
Polymer Science & Rubber Technology	North	Beant College of Engineering and Technology	Beant College of Engineering and Technology Gurdaspur, Punjab-143521	Punjab Technical University		4 Years	AIEEE and HSC	Principal Dr. Ravi Kumar Tel: 01874-221463 01874 - 221463,221464 Email:principalbcetgurdaspur@yahoo.com		http://www.grotal.com/e/Gurdaspur/Bachelor-of-Technology-in-Polymer-Science-and-Rubber-Technology-01I

Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
B.tech Degree in Chemical Engineering(Specialization in Polymer Technology), M.Tech. in Polymer	North	Sant Longowal Institute of Engg. & Tech., Longowal	Longowal - 148106, Distt. Sangrur (Pb.), India Phone : +91-1672-280057	Punjab Technical University	B.tech Degree-45 seats, M.tech-25 seats	B.Tech 4 Years & M Tech 2 Years	B Tech : HSC + AIEEE and M Tech : B Tech	Dr. B.K. Kanungo Deputy Registrar Email: dracad@sliet.ac.in Tel: 01672 - 253140 Office phone : 01672-253127,01672-253128 Office fax : 01672-253127		www.sliet.ac.in
M.Sc. (Polymer Science)	North	Mohanlal Sukhadia Univer-sity, Udaipur	Mohanlal Sukhadia UniversityUdaipur 313001 Rajasthan, India. Tel: +0294-5150705, 5150706, 5150707 & 515708Fax:+91-294-2471150E-mail: registrar@mlsu.ac.in	Rajasthan university	25	2	Science Graduation with physics, Chemistry & Maths	Tel: +0294-5150705, 5150706, 5150707 & 515708Fax:+91-294-2471150E-mail: registrar@mlsu.ac.in	Polymer Science, Rubber Processing, Rubber Product Manufacturing, Testing and Quality Control	http://www.mlsu.ac.in/
Post Diploma in Rubber Science &Technology	North	Vidya Bhawan Polytechnic Udaipur	Vidya Bhawan Polytechnic College Badgaon Road, Udaipur - 313 004 (Raj) Ph. 0294-2451309, 2452997 Fax: 0294 2452997	AICTE	25	18 months	Diploma in Engineering	Mr. Anil Mehta, Principal Ph: 0294 2451309, 2452997 Email: aniljheel@gmail.com	Polymer Science, Rubber Materials, Rubber Processing Technology, Rubber Product Manufacturing, Testing.	www.vbpolytechnic.edu.in

Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
B.Tech. in Leather Technology, Plastic Technology	North	Harcourt Butler Technol ogical Institute	Harcourt Butler Technological Institute Nawabganj, Kanpur (U.P.) - 208 002	Gautam Budh Technical University , I.E.T. Campus, Sitapur Road, Lucknow - 2226 021 (U.P.)	60 Sea ts	4 Years	HSC & Appropriate Enterance Test	Director (Prof. J. S. P. Rai) contact no: 0512-2534000 Phone : +91-512-2534001-05 Fax: +91-512-2533812 email: director@hbti.ac.in	Composites, Principle of Polymerization, Plastics Design, and Technology of Elastomers	http://www.hbti.ac.in/
M.Sc., Polymer Science	South	Sri Krishna-devaraya Univer-sity, Depart-ment Of Poly-mer Science & Techn-ology	S. V. PURAM ANANTAPUR-515003 ANDHRA PRADESH Telephone:08554 255231 / 255700 / 255781 Fax:08554 255244	SV University		2 Years	Science Graduation with physics and Chemistry	Dr.K. Chowdoji Rao, Contact: 91-9440533906 Email:- chowdoji@gmail.com		www.skuniversity.org
UG - Polymer Science & Technology PG-Polymer Science	South	Visvesv araya Technol ogical Universit y	"Jnana Sangama" Machhe Belgaum: 590 018 Tele: 0831-2498100 Fax: 0831-2405467 e-mail : registrar@vtu.ac.in	Visvesvar ay Technolo gi-cal University		4 years for B.E. & 2 yrs for M. Tech.	Undergraduate for B.E. and Graduate or B.Tech for M.tech	Tele: 0831-2498100 Fax: 0831-2405467 e-mail : registrar@vtu.ac.in		http://www.vtu.ac.in/index.php/home.html

Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
B.Tech in Polymer Science and Technology & M.Tech in Polymer Science	South	Sri Jayachamarajendra College of Engineering,	JSS Institution Camp, Manasa Gangothri, Mysore, Karnataka, 570006	Visvesvaray Technolo gi-cal University		B.Tech 4 Years & M Tech 2 Years	CAT AFTER 12TH FOR B TECH AND BTECH/BE GRADUATE FOR M TECH	Admin Officer : Email: admn@sjce.ac.in		http://sjcemysore.org/
POLYMER SCIENCE AND RUBBER TECHNOLOGY	South	Cochin University of Science and Technology	Cochin 682022, India Ph. 0484 - 2575723, Fax 2577747		20	B.Tech 4 Years & M Tech 2 Years	CAT AFTER 12TH FOR B TECH AND BTECH/BE GRADUATE FOR M TECH	hod: Dr. Sunil K. N. Kutty E mail hodpsrt@gmail.com Ph. 91 – 484 2575723		WWW.psrt.cusat.ac.in
B TECH : Polymer Engineering	South	University College of Engineering	Muttom P O, Thodupuzha, Kerala Pin: 685587	Mahatma Gandhi University, Kottayam.	66	4 years	CAT AND 50% MARK IN SCIENCE IN 12TH	HOD: Dr.Josephine George Email: Josephine@gmail.com Tel: 04862-256222		http://ucet.ac.in/
B.Tech in Polymer Technology	South	Kamaraj College Of Engineering and Technology	Kamaraj College of Engineering & Technology, Chennai. S.P.G.Chidambara Nadar – C.Nagammal Campus, S.P.G.C.Nagar, Virudhunagar - 626 001.	Accredited by NBA,New Delhi Approved by AICTE, Govt. of Tamilnadu & Affiliated to Anna University	45 Seats	4 Years	HSC & Appropriate Enterance Test	Dr.S.Vinayagamoorthi PhD. Email: kcet_vinayagamoorthi@yahoo.com Tel +91 4549 278791		http://www.kcetvnr.org/index.php

Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
B.Tech. Degree programme in Rubber & Plastics Technology and an M.Tech programme in Rubber Technology	South	Universit y of madras	University of Madras Chepauk, Chennai - 600005 Phone : 2539 9422	Madras University		B.Tec h 4 Years & M Tech 2 Years		HOD: Prof M Kandasamy Tel: 044-2230048		http://www.unom.ac.in/#
B.E. / B.Tech. in Plastics Engineering / Technology	South	Central Institute ForPlasti cs Engineer ing and Technolo gy (CIPET) offering B.Tech program me in Chennai, Ahmeda bad, Lucknow &Bhuba n-eshwar	CIPET Head Office,Guindy,Chen nai - 600 032.	Anna university for CIPET Chennai	250 Seat s in Four Cent -re	4 years	HSC & CET CIPET JEE	Head : Dr. K. Palanivelu Tel: 044-22254701 Mob: 09677123881 Email: cipetchn@eth.net		www.cipet.gov.in

Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
MSc Chemistry specialised in Polymer Science	South	Mahatma Gandhi University, SCHOOL OF CHEMIC-AL SCIENCES	Priyadarsini Hills P.O Kottayam Kerala, India Pin - 686 560 Tele : +91 481 2731050 to 68 Fax : +91 481 2731002, 9, 11 E-mail : mgumgu.ac.in	Mahatma Gandhi University, Kottayam.	5 seats	2 years	B.Sc Chemistry with Mathematics and Physics as subsidiaries with not less than 55% marks in part III	Dr.Sunil K Narayanankutty Professor,Dept.of Polymer Science & Rubber Technology Cochin University of Science & Technology,KochiTel: 0481 – 2731050/68		www.mgu.ac.in
M.Tech in Polymer Science and Technology					10 seats	2 years	B.Tech/B.E in Polymer Science and Technology/ Fibre Science and Technology/Rubber Technology/Plastic Technology/Chemical Engineering/ Mechanical Engineering/ Material Science/Chemical Technology with 60% or equivalent grade/ M.Sc in Chemistry / Polymer Science/Applied Chemistry from a recognized institution with 65% or equivalent grade. Preference for candidates with valid GATE score			

Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
B.tech Ploymer technology and rubber technology , M.S in polymer Technology	South	Hindustan College of Engineering	40, G.S.T Road, St. Thomas Mount, Chennai - 600 016. India. Ph. : +91-44-2234 1389 / 2234 2508 Fax: +91-44-2234 2170 Email: hetc@vsnl.com	Hindusthan university		4 years		Ph. : +91-44-2234 1389 / 2234 2508 Fax: +91-44-2234 2170 Email: hetc@vsnl.com		http://www.hindustanuniv.ac.in/
B.Tech - Rubber and Plastic Technology Engineering & M.Tech.(Polymer Science and Engineering)	South	Anna University, Chennai	Student Affairs Anna University Chennai - 25 Tel:044 - 2235 7080 / 81	Anna university		B.Tech -4 yrs, M.Tech-2yrs	Post B.Sc 70% PCM	TELEPHONE NUMBER +91 44 22230850 / 222373777 / 22237276 Extn.: 207/238 FAX +91 44 22232403 EMAIL ID rptmit@annauniv.edu		http://www.annauniv.edu
M.Tech Polymer science	South	Alagappa College of Technology	Guindy, Chennai 600025	Anna university		2 years				www.annauniv.edu/act

Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
B.Tech - Polymer technology	South	B. S. ABDUR RAHM-AN CRES-CEN ENGINE-ERING COLLEG E	SEETHAKATHI ESTATE G.S.T. Road, Vandalur, Chennai - 600 048, India (Near Anna Zoological Park) Tel :+91442751347/34 8/350/375 Fax : +91-44-22750520 Email:cec@crescen tcollege.org	Anna university	30 Seats	4 years	HSC and appropriate Entrence test	Tel :+91442751347/34 8/350/375 Fax : +91-44-22750520 Email:cec@crescent college.org		http://www.crescentcollege.org/
B.Tech-Polymer Engineering	South	Amrita Vishwa Vidyape etham, Coimbat ore	Amritanagar,Coimb atore-641112 Phone: +91(422) 2685000 Fax: +91(422) 2656274 Email: univhq(at)amrita.ed u			4 years		Phone: +91(422) 2685000 Fax: +91(422) 2656274 Email: univhq(at)amrita.ed u		http://www.amrita.edu/
B Tech : Rubber & Plastic Technology	South	Madras Institute Of Technolo gy, Rubber And Plastic Technolo gy Departm -ent	MIT Campus, MIT Road, Post Radha Nagar, Chromepet, Chennai, Tamil Nadu 600044 Tel: 044 2223 3560	Anna University		4 Years	HSC and appropriate Entrence test	Dr.K.Ravichandran HOD Email: ravi@mitindia.edu Tel:044-22516050		www.mitindia.edu

Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
DIRI & PGD-IRI	All India	Indian Rubber Institute	Indian Rubber InstituteFlat No. 169, 4th Floor, Karnani Estate, 209-AJC Bose Road, Kolkata - 700 017	Exam conducte d jointly by IIT Kharagpu r and IRI		1 year	DIRI - 12th Science (PCM)/Diploma in Engg.PGD-IRI - B.Sc (PCM), B.Tech/M.Tech	HQ - Kolkata & Eight Branches (Kolkata, Mumbai, Chennai, Delhi, Rajasthan, Kerala, Karnataka & Gujarat. Details are available in website. Www.iri.net.in	Polymer Science, Rubber Processing Technology, Rubber Materials, Rubber Product & Testing.	www.iri.net.in
Junior Rubber Technician (JRT)/Sr. Rubber Technician (SRT)	All India	Rubber Skill Developme nt Council (RSDC)	Rubber Skill Development Council Ramakrishna Dalamia Wing, PHD House (4th Floor),4/2, Siri Fort Institutional Area, August Kranti Marg, New Delhi - 110016 Tel: +91 11 41009347- 48 | Fax: 91 11 41004899	Training is provided by Training Providers affiliated with RSDC (IRI, HASETRI, Labernet etc..)		250 hrs	For JRT - 12th Std Pass/Diploma in Engg. For SRT - B.Sc./B.Tech	Mr. Lijo Joseph, Dy.Director (Standards & Affiliation) Email: lijo.joseph@rsdcindia.in Mobile No.: +91 8130479933	Polymer Science, Rubber Materials, Rubber Processing, Rubber Product and Testing, Safety & Quality.	Website: www.rsdcindia.in
Modular Training Courses / Workshop	All India	Hari Shankar Singh-ania Elastom-er & Tyre Re-search Institute (Hasetri) - Scienti-fic & Industrial Re-search Organi-sation	Jaykaygram, PO: Tyre Factory, Kankroli, Dist. Rajsaand - 313324 (Raj)	Affiliated Training Provider of Rubber Skill Developme nt Council (RSDC)			People working in rubber & allied Industry	Mr. M Asif email: Library@hasetri.co m/ masif@ktp.jkmail.c om	Rubber Materials, Rubber Processing, Rubber Product Manufacturing, rubber Testing, Simulation & Predictive Techniques in Rubber Industry, Laboratory accreditation system (NABL) etc. Training on different Job roles prescribed as per National Occupational Standards (NOS) in Rubber Industry	

Course Offered	AIRIA Zone	Name of Institute/ College	Address of the Institute/College	University Name & Address	No. of Seats	Dura-tion	Eligibility	Contact details of the person incharge	Major Subjects covered	Website
Modular Training Courses / Workshop	All India	IRMRA	Indian Rubber Manufacturers Research Association (IRMRA), Plot No. 254/1B, Road N0.16V. Wagle Industrial Estate, Thane (West) PIN - 400604. Maharashtra, India				People working in rubber & allied Industry	Mr. Raj Kumar, Sr. Dy.Director Tel. No. : +91-22-25811348; 25823910; 25803753. Email: info@irmra.org	Rubber Materials, Rubber Processing, Rubber Product Manufacturing, rubber Testing etc.	
Shroff S.R. Rotary Institute of Chemical Technology (SRICT)			Block No: 402, Ankleshwar-Valia Road, Ta:Valia, Dist: Bharuch 393 002 Gujarat							Website: www.srict.in

LIST OF THE INSTITUTES OFFERING RUBBER COURSES ACROSS INDIA

Sr. No.	Name of Institutes	Website
1	Alagappa College of Tech.,Guindy, Chennai	www.annauniv.edu/act
2	Ambitious College of Distance Education	www.ambitiouscollege.com/?
3	Amrita Vishwa Vidyapeetham, Coimbatore	www.amritha.edu
4	Anna University,chennai	www.annauniv.edu
5	Beant College of Engineering & Technology	www.bcetgsp.ac.in
6	Bhadristan Institute of Engineering,	
7	BIT, Mesra, Polymer Engineering	http://www.bitmesra.ac.in
8	Central Institute For Plastics Engineering and Technology	www.cipet.gov.in
9	Cochin University of Science and Technology, Department of Polymer Science and Rubber Technology	psrt.cusat.ac.in
10	Crescent Engg. college, GST Road, Vandalur, Chennai	www.crescentcollege.org www.bsauniv.ac.in
11	Deccan Education Society, Technical Institute	
12	Delhi College of Distance Education	www.dcde.org
13	Delhi College of Engineering	dce.edu
14	GOVERNMENT POLYTECHNIC MUMBAI	http://www.gpmumbai.ac.in/
15	Gujarat Technological University,	www.gtu.ac.in
16	Harcourt Butler Technological Institute,	www.hbti.ac.in
17	Hindustan College of Engineering	http://www.hindusthan.net
18	Hindustan Institute of Engineering Technology	www.hiet.in
19	INDIAN INSTITUTE OF POLYMER SCIENCE	http://www.iipsedu.net
20	Indian Institute Of Technology Delhi, Polymer Science & Engineering	cpse.iitd.ac.in
21	Indian Institute of Technology, Kharagpur	www.iitkgp.ernet.in
22	Indian Rubber Institute	www.iri.net.i
23	Institute of Chemical Technology (Department of Polymer and Surface Engineering) -Mumbai	www.udct.org
24	Institute of Technology - Banaras Hindu University, Varanasi	www.iitbhu.ac.in
25	Indian Rubber Manufacturers Research Association (IRMRA)	www.irmra.org

Sr. No.	Name of Institutes	Website
26	Kamaraj College of Engg. & Technology, DEPARTMENT OF POLYMER TECHNOLOGY	www.kcetvnr.or
27	Karnataka Government Polytechnic	http://www.kptmng.org
28	Laxminarayan Institute of Technology, Nagpur	nagpuruniversity.org/litnagpur/
29	LD College Of Engineering	www.ldceahd.org
30	Madras Institute Of Technology, Rubber And Plastic Technology Department	www.mitindia.edu
31	Maharashtra Institute of Technology (MIT), PUNE, Department of Polymer Engineering	http://www.mitpune.com
32	Mohanlal Sukhadia University, Udaipur	http://www.mlsu.ac.in
33	MSME-Technology Development Centre, (PPDC)	http://www.ppdcmeerut.com
34	North Maharashtra University, Deptt. Of Chemical Technology, Jalgaon	www.nmu.ac.in
35	Rubber Training Institute	
36	Sant Longowal Institute of Engg. & Tech., Longowal	www.sliet.ac.in
37	Sri Jayachamarajendra College of Engg. Mysore	http://sjcemysore.org
38	Sri Krishnadevaraya University, Department Of Polymer Science & Technology	www.skuniversity.org
39	SSE College of Engineering & Technology, akola	www.coeta.or
40	Tezpur University	http://www.tezu.ernet.in
41	University College of Engineering, Thodupuzha	http://ucet.ac.in/
42	University college of Science & Technology, Calcutta	www.caluniv-ucsta.ne
43	University of Madras - Department of Polymer Science, Guindy Campus	www.ucom.ac.in
44	Visvesvaraya Technological University	www.vtu.ac.in
45	Rubber Park	www.rubberparkindia.org
46	LABOUR NET	www.labournet.in
47	BASIX Academy for Building Lifelong Employability (B-ABLE)	www.b-able.in
48	NewTek	
49	IL&FS Skills Development Corporation	www.ilfsets.com
50	Elysium Technologies Pvt Ltd	www.elysiumtechnologies.com
51	HASETRI-Hari Shankar Elastomer and Tyre Research Institute	www.hasetri.com

RUBBER TECHNOLOGY COURSE AT

GOVERNMENT POLYTECHNIC
MUMBAI

- The Diploma in Rubber Technology course was started in 1999 and the MOU was signed between Government Of Maharashtra / Government Polytechnic, Mumbai and the industry partner All India Rubber Industries Association **(AIRIA)**.
- All the required machines and equipments were provided by either donors from rubber industries or AIRIA.
- This programme is a good blend of theory and practice including six months actual training in the Industry.
- From academic year 2014-15, the eligibility criteria for this course is changed from 2 ½ years Post HSC to 3 years Post SSC (10th pass).
- Curriculum developed and modified by the experts from Industries.
- Regular Industry visits are conducted in each semester. Also students are promoted to attend conferences and Rubber Expo's conducted by AIRIA & IRI almost every year.
- Special Training cum Industrial Visit for one week (once in a year) is organized at Rubber Board, Kottayam, Kerala where students get an excellent opportunity to visit Rubber plantation, TSR & Latex factories and perform practical's in Rubber Board Laboratories.
- Every year AIRIA - Education Trust rewards scholarships worth Rs. 50,,000 (Fifty Thousand) to the deserving students of Rubber Technology course.
- **The renovation of Rubber Technology class room with ultra modern fittings (A/C's, new lighting, new furniture's & LED projector etc.) are done by AIRIA.**
- Till to date this diploma program has produced 226 technicians who are serving the rubber industry in different capacities and fields of production, marketing and quality control etc.
- All pass out students are very well placed **(100 % placement)** in the industries. Few of them had opted for higher education. Pass out students are eligible for direct second year admission for degree courses of engineering prefabily in Rubber, Polymer or Chemical. with other options of Mech. & Electricals degree also.

GOVERNMENT POLYTECHNIC, MUMBAI
DIPLOMA IN RUBBER TECHNOLOGY

49, Kherwadi, Ali Yawar Jung Marg, Bandra (E.), Mumbai -51
Phone: - +91-022-26474780 / 26474587, Fax No. : - 26472552

ADMISSION ANNOUNCEMENT

- **Unique course, only in Maharashtra in Association with AIRIA (All India Rubber Industries Association).**
- **AICTE recognized, MSBTE approved, DTE approved.**
- **Eligibility: - S.S.C (Class 10 th.) Pass.**
- **Admission - Through Centralize Admission Process (CAP rounds)**
- **Intake :- 30 seats + 2 seats through TFWS (Tuition Fee Waiver Scheme)**
- **Course Fees: - Total - Rs. 16,972/- per year.**
- **Duration :- 3 Years Total - 6 Semesters (5 Sem. Class Room Teaching + 1 Sem. Industrial Training).**
- **Highly qualified teaching staff / Experts from Rubber Industries.**
- **Ultra-Modern Class Rooms and well equipped laboratories.**
- **Hostel Facilities available for boys only.**
- **Scholarship for deserving candidate through AIRIA .**

100 % Job Placement in last 10 years.

For Admission details :- See Notification on www.dte.org.in
OR
Contact Academic Co-ordinator - 09892698081 / 09892682388
Principal(Dr. H.P.Taskar) Government Polytechnic, Mumbai

B.E. Program

- Chemical Engineering — 60 seats
- Environmental Science & Technology — 60 seats
- Mechanical Engineering — 60 seats
- Electrical Engineering — 60 seats
- Chemical Technology — 60 seats
  - Pharmaceutical Technology
  - Polymer & Rubber Technology
  - Dyes and Pigments Technology
  - Glass & Ceramics Technology

M.E Program

Chemical Engineering and Mechanical Engineering (2015)
Electrical Engineering (2016)

Centers of Excellence

Environmental Studies
Energy Studies

Feathers in the Cap of SRICT

- MOU with Miami University, Oxford, Ohio, USA with a plan to launch world class courses in the field of engineering and to give our students an international exposure via student exchange plans
- Schedule I Environmental Auditor approved by GPCB (Gujarat Pollution Control Board)
- SRICT : The first ISO certified Engineering College in India certified by Quality Circle Forum of India.
- Learning center for Associate Membership of Indian Institute of Chemical Engineers which is equivalent to B.E.

Infrastructure and Facilities

- We are spread across 25 acres of land with lush green lawns with in-house facilities like five seminar halls, playground for outdoor sports, laboratories, library, canteen, biogas plants, rain water harvesting system and RO drinking water facilities.
- Our classrooms are ICT enabled with high speed internet connectivity throughout the campus. We have state of the art laboratories for computer, mechanical, chemical and electrical engineering students. Our digital library is rich in content, Gharda Technical Library providing back volumes (1907 to 1999) of chemical abstracts, various national and international journals, e-journals, reference books, handbooks and sufficient text books.
- We provide canteen facilities on campus for lunch and snacks offering quality food.
- We give 100% placement assistance via campus recruitment.
- College bus is available from Ankleshwar to College.



We aim to provide the highest quality educational experience for every student and to enable students to achieve their highest goals whether in higher education, training or employment.

HARI SHANKAR SINGHANIA ELASTOMER & TYRE RESEARCH INSTITUTE (HASETRI)

HASETRI is India's first and foremost research centre, promoted by JK Tyre & Industries Ltd, named after renowned industrialist late Mr. Hari Shankar Singhania, former President of JK Organisation and past President of International Chamber of Commerce. HASETRI fulfils the nation's need for developing newer and better technologies for elastomers, tyres and other rubber products. The primary goal of HASETRI is to foster development and evaluation of new technologies for Rubber & Allied industries including technical manpower development in India and Asia Pacific Region.

This research institute was set up with the objective of broadening the scope of analytical testing, performance evaluation, and product certification and other scientific testing to make world class products and providing service to global customers. The research and development activities of HASETRI are guided by eminent scientists and professors from different national and international institutes/universities.

HASETRI, established in October 1991, is recognised under SIRO (Scientific and Industrial Research Organisation) by the Department of Scientific & Industrial Research (DSIR), Govt. of India. HASETRI, with its state of the art infrastructure, has been acknowledged by the Indian Institute of Technology (IITs) and other Universities of national repute for collaborative research leading to M.Tech, Ph.D & Post Doctoral. At present it has got three campuses, located at Kankroli (Rajasthan), Faridabad (Delhi NCR) & IIT Madras.
It is first of few laboratories accredited by NABL (National Accreditation Board for Testing and Calibration Laboratories), as per ISO/IEC 17025:2005 for Testing and Calibration.

HASETRI is taking an active role in developing test standards for national as well as international standardising bodies. Scientists & Engineers of HASETRI are being invited as guest faculty by different universities and institutes. Strong research activities had enabled HASETRI to publish more than 250 research articles in various reputed international journals. HASETRI is also actively involved in filing patents with its innovative research.

HASETRI conducting various short term courses on Rubber Science & Technology, Rubber Materials and Compounding, Rubber Processing Technology etc.

TRAINING CALENDAR FOR THE YEAR 2015/2016

S.No.	Course	Duration	Course Fee
01.	Rubber Processing Technology	11-13 Aug. '15	Rs. 12500/- + Service Tax
02.	Rubber Materials & Compounding	7-9 Sept '15	Rs. 12500/- + Service Tax
03.	Testing & Reverse Engineering	10-12 Nov.15	Rs. 12500/- + Service Tax
04.	Laboratory Quality Management as per ISO/IEC 17025:2005	12-14 Jan '16	Rs. 12500/- + Service Tax
05.	Measurement Uncertainty in the field of Mechanical & Chemical Testing	8-10 March '16	Rs. 12500/- + Service Tax

Contact Us At:

HASETRI
Jaykaygram , Kanroli -313342
Dist.Rajsamand, Rajasthan India
Phone No: (91)-(2952) -232019/232079 Mobile No : +(91) -9414786040
Fax No : +(91)-(2952)-2302019
Email : library@hasetri .com / rm@hasetri.com

Govt. College of Engineering Kannur

The Govt. College of Engineering Kannur was established in 1986 as a centre for imparting quality engineering education in northern Kerala. A tour through this site gives you a first hand experience of life in the campus and what makes the institute one of the premier engineering colleges in south India.The present campus of the college is located at Mangattuparamba, 15 km from Kannur Railway station on the national highway 17. The foundation stone of the college main building was laid by Sri.K.Karunakaran, the then chief minister of Kerala.

Address

Govt. College Of Engineering,
Mangattuparamba,
Parassinikkadavu (P.O),
Kannur-670 563,
Kerala, India.
principal@gcek.ac.in

Excel Floors

BLOCK D-11, ARDEE CITY GURGAON

ARDEE CITY

Fully Built-up ready possession units of 4 Bedrooms D/D with servant room available.
Construction linked payment plan for 3 B/R, D/D with store, study & servant room available.

BASIC PRICE ₹ 160 LAC onwards.

Contact: R.V. CORP.- 9810087001

SAMPLE FLAT READY

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- 300 Sq. Yds. Plot Size
- Gated Complex
- Row Houses
- Vitrified Tiles with Wooden Texture
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- Air Conditioner Master Bedroom
- Modular Kitchen
- Geysers and Exhaust Fans
- GROHE / Kohler or Equivalent Bathroom Fittings
- All POP and Velvet APEX Paint
- All Wooden Windows, Doors and Wardrobes
- Adequate TV and Telephone Points
- Power Backup by 1KVA Invertor
- Video Door Phone
- Conveniently located next to Sushant Lok Metro Station
- Located on 200 feet Sector Road
- Lush Green Pollution Free Environment with nearby Schools, Multiplexes, Shopping Malls & Gold Souk Jewellary Mall
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- Inhabited with more than 2000 Families

Corporate Office : Excel House, 37, Commercial Centre East of Kailash, New Delhi-110065

E-mail : excel.polish@gmail.com, autoflex@vsnl.net

URL : www.excelpolish.com, www.autoflex.in

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CHAIRMAN - AIRIA(NR)

Gaurav Malhotra (C.E.O.)
AUTOFLEX PVT. LTD.

Saurabh Malhotra (C.E.O.)
EXCEL POLISH COMPANY PVT. LTD.

KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

Polymer Technology is a unique branch of engineering in this part of the state. Polymer has emerged as an active discipline of Modern Science and Technology which has more demand in education and employment markets. The term **"Polymer"** consists of two closely related classes of material i.e. **Rubber and Plastics.**

Offering Courses: Department of Polymer Technology stated in 1998 offers four years B.Tech Polymer Technology and two years M.Tech Polymer Science & Engineering. Polymer department has been approved as centre for research by Anna University, Chennai. Hence, Polymer department offers Ph.D programme too since 2010.

Objective of the department: The objective of this program is to impart quality education to the students with high level coverage of emerging trends in Polymer technology that will enable the students to face the challenges to be met and make tomorrow's technological choices.

Curriculum: Polymer Technology is highly dynamic, advanced and emerging interdisciplinary field. The curriculum has the balanced combination of chemical, mechanical and materials engineering concepts. The programme covers the entire area of polymer science and engineering from synthesis of polymers, characterization and testing to design and processing of plastics, rubber and composite products, including design and fabrication of moulds and products using advanced software such as Mouldflow, Pro-E, and AutoCAD. Classes emphasize hands on learning.

History of the Department

Programme of Study	Description
UG B.Tech (Polymer Technology)	Started with 40 seats in 1998, Intake increased to 45 in 2005 Intake increased to 60 in 2014, Accredited by NBA-AICTE in 19th July 2008 for 3 years, Reaccredited by NBA-AICTE in 22nd August 2014 for 2 years
PG -M.Tech (Polymer Science and Engineering)	Started with 18 seats in 2009
Ph.D.	Approved by Anna University of Technology, Tirunelveli dated on June 2010.
Centre for Research	Approved by Anna University of Technology, Chennai dated on 08 Feb 2012 and renewed dated on 09 March 2015.

Vision

The vision of the department is to be a renowned undergraduate program with strong knowledge in the field of polymer technology, so that the graduates can be absorbed by the polymer industries as well as research and educational institutions, home and abroad.

Mission

Our mission at the department of Polymer technology is "to provide the students from urban and rural areas with the profound knowledge and develop the technical skills, foster ethical behavior that would enable all students to achieve Total Quality Education"

Program Educational Objectives (PEOs)

- To produce employable graduates with the knowledge and competency in Polymer Technology complemented by the appropriate skills and attributes.
- To produce creative and innovative graduates with design and soft skills to carry out various problem solving tasks.
- To enable the students to work as teams on multidisciplinary projects with effective communication skills, individual, supportive and leadership qualities with the right attitudes and ethics.,/li>
- To produce graduates who possess interest in research and lifelong learning, as well as continuously striving for the forefront of technology.

Program Outcomes (Pos)

At the completion of B.Tech Polymer technology program, students should have:

- An ability to apply knowledge of science and engineering fundamentals in polymer technology and related fields
- Acquire in-depth technical competence in polymer technology discipline
- An ability to design a polymer related system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- An ability to function on multi-disciplinary teams to produce polymeric products. An ability to undertake problem identification, formulation and solution in polymer technology
- An understanding of professional and ethical responsibility
- An ability to communicate effectively with engineers and the community at large,
- The knowledge necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context,
- An ability to acquire knowledge of contemporary issues, and
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

- An ability to apply and integrate knowledge from four elements i.e., polymer structure, properties, process and performance to solve the industrial problems and also to develop an entrepreneur skill

Memorandum of Understanding has been signed between the Kamaraj college of Engineering and Technology, virudhunagar and Montan University of Leoban, Austria , 28.11.2013 (For five years) for joint research projects and exchange of faculty members and research scholars for mutual benefit and also for having closer interaction in the hi-tech fields of current interest. On this basis, three students are selected to undergo higher studies at Montan University with financial assistance

Contact Us

Kamaraj College of Engineering & Technology

Approved by AICTE, Govt. of Tamilnadu & Affiliated to Anna University, Chennai.

S.P.G.Chidambara Nadar - C.Nagammal Campus, S.P.G.C.Nagar,

Virudhunagar - 626 001.

Phone : +91 4549 278791 / 278171

Fax : +91 4549 278172

Email : kcet@vsnl.com

MADRAS INSTITUTE OF TECHNOLOGY

The Department of Rubber and Plastics Technology was started in the year 1988 and offers a four year degree programme in B.Tech Rubber and Plastics Technology and a two year programme degree program in M.Tech Rubber Technology, besides M.S. (By Research) and Ph.D program in the field of Polymer Science and Technology.

The Department of Rubber and Plastic Technology has well qualified and experienced faculty members. The department has constant interaction with the field related industries and research organization to take up collaborative research work and to coordinate the students for doing project work, in-plant training and placement activities.

ABOUT THE PROGRAMME

The Department of Rubber and Plastics Technology was started in the year 1988 and offers a four year degree programme in B.Tech Rubber and Plastics Technology and a two year programme degree program in M.Tech Rubber Technology, besides M.S. (By Research) and Ph.D program in the field of Polymer Science and Technology.

TITLE	DEGREE	SPECIALISATION	SEMESTER
UG	B.TECH (Full Time)	RUBBER AND PLASTICS TECHNOLOGY	8
PG	M.TECH (Full Time)	RUBBER TECHNOLOGY	4
RESEARCH	M.S (By research) (F.T&P.T)	POLYMER SCIENCE AND TECHNOLOGY	

SOCIETY OF PLASTICS AND RUBBER TECHNOLOGISTS ABOUT SPART

The students association called Association of Rubber Technologists (ART) was started in the year 1988 and re-christened as Society of Plastics and Rubber Technologists (SPART) in 2003.

The Society of Plastics and Rubber Technologists is a body comprising of students and staff members of the Department of Rubber and Plastics Technology, which constantly strives to improve the personality of all the students of this illustrious department. It is a Unique Association which molds the aspiring students into Technical Professionals with career objective. This forum provides opportunities for our Students to improve their organizational and leadership skills.

ACTIVITIES OF SPART

The SPART conducts activities throughout the year, which are primarily dedicated to the development of the students. Some of the activities include Plastic Awareness Program; SMART Sessions for students; arranging guest lectures on technical and management areas; Industrial Visits and Computer Aided Designing Classes. SPART Conducts Alumni Meet every year and gathers suggestions on the development of the Department.

INDIAN PLASTICS INSTITUTE (IPI)

About Indian Plastics Institute (IPI)

The Indian Plastics Institute is the premier institute for Education and Technology Training for the plastic industry in India with over 3 decades of standing, with its Head Office in Mumbai. IPI was formed from taking over Plastics & Rubber Institute, London (PRI). IPI has 11 Chapters and 7 sub chapters in all major centers in India with over 3000 professional members from the industry.

General Information

Madras Institute of Technology,

MIT Road, Radha Nagar

Chromepet Chennai,

TamilNadu 600044, India

TEL No : +91 44 2251 6002

भारतीय प्रौद्योगिकी संस्थान खड़गपुर
Indian Institute of Technology Kharagpur

Details on M.Tech (Rubber Technology) in IIT Kharagpur

M.Tech in Rubber Technology is a rare course in engineering, offered at IIT, Kharagpur. Engineering graduates in streams like Rubber Technology, Mechanical Engineering, and Textile Engineering are eligible to apply. One must qualify GATE for admission. Selected candidates must pay Rs. 5000/- per annum as tuition fees.

Course Curriculum of M.Tech Rubber Technology in IIT Kharagpur

Brief Description on M.Tech Rubber Technology

M.Tech degree in Rubber Technology exposes students to technical side of rubber processing. Core subjects like adhesion technology, rubber processing principles, rheology, and foam technology are covered under the course. Other than these subjects, students can pursue subjects offered by other departments like Computer Software, Programming and data structures. Successful completion of the course will help one to work in the job profiles of Engineer, Scientist, etc in firms like HLL Life Care Limited, ISRO, DRDO, etc.

Admission procedure for M.Tech Rubber Technology in IIT, Kharagpur

- Engineering degree from a recognized institute is the basic eligibility required to apply for this course. The degree must be obtained with minimum 60% marks in any of the following streams.
- Production Engineering
- Production Engineering and Management
- Production and Industrial Engineering

- Rubber Technology
- Plastic and Rubber Technology
- Computer Applications
- Textile Engineering and Fibre Science and Engineering
- Mechanical Engineering

Candidates having master's degree in Chemistry/Applied Chemistry are also eligible to apply. Eligible candidates must qualify GATE to seek admission to the course. Sponsored candidates and B.Tech graduates can also have admission. Such candidates are exempted from having a valid GATE score. Sponsored candidates must possess minimum 60% marks in qualifying exam where as IIT graduates need to have 80% aggregate marks.

Fee structure for M.Tech Rubber Technology in IIT Kharagpur

- First Semester

  "Tuition Fee: Rs. 5000/- per annum
- Caution Deposit: Rs. 6,000/-
- Placement Service Fee: Rs. 500/-
- Insurance: Rs. 650/- per annum
- Student Brotherhood Fund: Rs. 100/- per annum
- Other Non Refundable fees: Rs. 6050/- per annum
- Total Fee for other semesters: Rs. 8,750/-

Fee structure for the course is subjected to change from time to time. It may change according to the norms and policies of IIT, Kharagpur.

Read more here: http://entrance-exam.net/details-on-mtech-rubber-technology-in-iit-kharagpur/#ixzz3cdd0eE1h

Contact

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

Kharagpur

India - 721302

+91-3222-255221

FAX : +91-3222-255303

SSE COLLEGE OF AKOLA

He department of Polymer Technology is of one of its only kind in this region. It has a wide faculty of Doctorate and Post Graduate in the department looking after academic interest of the students. The students are given the exposure in both theoretical and practical aspects of Polymer Technology. Apart from a rigorous curriculum of an initial two years, in the course of general and Chemical Engineering subjects, the students are provided with through insight in Heat Transfer, Instrumentation & Control, Polymer Material including rubber , other Elastomers and Blends & Composites, Polymer Chemistry, Polymer Reaction Engineering , Structure Property Relationship, Polymer Processing, Polymer Viscoelasticity & Rheology, Mold design ,Plant Design & Product Engineering, Economics and Management.

He laboratories are well equipped having testing and processing machineries. Apart from the extensive development at the institute, the students are given sufficient exposure to the industry by conducting regular industrial tours and implant training at industries of high repute. The students Association of Polymer Technology (SAPT) is also in existence to look after the personality development, professional competency and help students to become effective leaders.

We as a department, are trying to build capable engineers and technocrats who will fulfill requirements of the industry.

We as a department, are trying to build capable engineers and technocrats who will fulfill requirements of the industry.

We would like to build a constant rapport with the industry and would seek your co-operation for long, consistent, truthful relationship.

Highlights

1. First to start this course in the region
2. Offers four year degree course in the polymer technology
3. Well-equipped laboratories.
4. Well qualified staff.
5. Immense scope for placements and self-employment.
6. All laboratories are recognized for research.
7. Students are motivated for national/international conference, exhibition and other co & extracurricular events.
8. Industrial consultancy, testing & joint projects.

Aims

1. To provide the quality education.
2. To provide advance & up-to-date knowledge & information in related fields.
3. To ensure that institution is not converted into mere coaching center.
4. To ensure that institution is not converted into mere coaching center.
5. To help & guide the students to develop student centered educational system.
6. To participate actively in industrial development of the region.
7. To support actively the community development of the region.

Objectives

1. To give guidance & counseling to students for academic difficulty.
2. To imbibe in students ethical & moral values & character development.
3. To encourage staff for upgrading knowledge & qualification.
4. Dissemination of knowledge through publication & learning resource material.
5. To increase interaction with industry.

Departmental Achievements

1. 100 % Placement from last five years, placed in reputed organizations.
2. Students opted for higher studies at IIT, UICT, and CIPET Etc.
3. Departmental Laboratories are recognized for Ph.D. Research program.
4. Conducting One Year Diploma of Indian Plastics Institute. (DIPP)
5. Arranging National Seminar (PolyEra, Technothlon etc.), expert talks, Work Shop, Plastic Awareness Program.
6. Training & Placement, Industrial Tours/Visits.
7. PLASTINDIA Foundation Scholarship SCHEME for meritorious students
8. PLASTINDIA GOLD MEDAL AWARD
9. Student Association of Polymer Technologies for overall development of students.
10. QIP for staff in department
11. Departmental Library and E-Library
12. Consultancy and testing Cell (Dr. Panjabrao Deshmukh Design and Consultancy Cell)
23. Departmental Patents
    - Lubricating Gel from Polyolefin waste.
    - Energy recovery from plastic waste (Down jet Combustion) (Provisional)
24. Departmental Awards
    - Rubplas Excellence Award
    - Shriram Institute for Industrial research
25. Departmental Professional bodies
    - Indian Plastics Institute, Subchapter, Akola.
    - I.S.T.E.
    - PlastIndia Foundation

POLYMER PROCESSING LABORATORY

Polymer Reaction Engg. & Polymer Synthesis Laboratory

Courses offered and Seat distribution for Admission to First Year Engineering & Architecture

UNDERGRADUATE PROGRAMME

Sr. No.	COURSE	DEGREE	INTAKE	DTE CODE	COURSE DURATION
1	Chemical Engineering	B. Tech.	60	111650710	Four Years

POST GRADUATE PROGRAMME

Sr. No.	COURSE	DEGREE	INTAKE	DTE CODE	COURSE DURATION
1	Chemical Engineering	M. Tech.	18	111650270	Two Years

CONTACTS
Principal
Prof. Dr. S. K. Deshmukh,
College : COLLEGE OF ENGINEERING AND TECHNOLOGY, AKOLA.
Full Address : Babhulgaon (Jh) N.H. No-6,Nagpur Road,
Akola District, AKOLA.
PIN : 444104.
State : MAHARASHTRA STATE.
Phone : 0724-2259024, 2259069
E-mail : principalcoeta@gmail.com
Nearest Rly : AKOLA
Station Nearest : SHIVANI, AKOLA.

SHREE ANANTAPUR UNIVERSITY

Department of Polymer Science & Technology

Year of Establishment of the Department: **1985**

A Brief history of Department:

Anantapur is one of the districts which is suitable for starting polymer industries which require only minimum amount of water and electricity. Keeping this objective in view, the course viz., M.Sc., in polymer science was started in 1981 with the help of some staff members in the Departments of Chemistry and Physics. In 1985, a separate department of Polymer Science was established.

Chairmen, BOS & Head of Department

Chairman/Chairperson	**Head/Coordinators**
Prof.K.Chowdoji Rao	Prof. K. Chowdoji Rao

Names and Designations of the faculty

Chairman BOS:	255864
Head:	255739
Office:	255740

Name	Designation	Mobile	Off.	e-mail
1. Dr.K. Chowdoji Rao	Professor	91-9440533906	255739	chowdojirao@gmail.com

Vice Chancellor(I/C)	Prof. K.Lal Kishore	Phone#255231(O),255802(O) Fax # 255244(O), 255267® Email:vcskuniversity@gmail.com
Registrar	Prof.K.Dasaratha Ramaiah	Phone # 255700(O), 255804 (O)9441244439 Fax # 255805(O), Email:regskuniversity@gmail.com
Principal	Prof.B.Phaneeswara Raju	Phone: # 255703(O) Email: pricipal@skuniversity.org
College Development Council Dean.	Prof.M.C.S.Subha	Phone # 255809(O), 9441039629

TEZPUR UNIVERSITY

Tezpur University was established on 21st January in 1994 by an Act of Parliament of India, The Tezpur University Act, 1993 (Act No. 45), as a non-affiliating and residential Central University.

The University is located at Napaam, about 15 Km. east of Tezpur town in the Sonitpur District of Assam. It has a campus of 252 acres of land, in which required infrastructure is developed to provide an excellent atmosphere for quality education and research.

Tejpur University Eligibility

Program	Eligibility
M. Tech in Polymer Science and Technology	B.Tech/B.E. in Polymer science and Technology/Fiber science and Technology/ Textile Technology / Plastic Technology/Chemical Engineering; Master of science in any discipline from a recognized institute with 50% marks or equivalent grade and having Chemistry as one of the subject in the Bachelor Degree.

Contact Details
Tejpur University
Napaam, Tezpur,
Sonitpur -784 028
Assam, India
Phone No : **03712-267128**
Email: admin@tezu.emet.in
Website: www.tezu.ernet.in

Vidya Bhawan Polytechnic College, Udaipur

Affilated To Board of Technical Education, Govt. of Rajasthan
Approved by All India Council of Technical Education
Best Polytechnic Award Conferred by NITTTR (MHRD, Govt. of India)

(Established - 1956)
Approved by AICTE, New Delhi & Affiliated to BTER, Govt. of Rajasthan.
Best Polytechnic College Award and outstanding Technical Institute Award Conferred by NITTTR, MHRD, Govt. of India

- India's First Post Diploma in Polymer Science & Rubber Technology with support of JK Tyre and Industries Ltd., Hari Shankar Singhania Elastomer and Tyre Research Institute (HASETRI) & IRI Branch, Rajasthan.
- Candidates are also eligible for PGDIRI and DIRI examination, Controller of Examination is Rubber Technology Center, IIT, Kharagpur & is coordinated by IRI, Rajasthan Branch.
- DIRI topper in India in 2013 and 2014, PGDRI Third Rank in 2013.
- 3 Semester (18 Months), In plant training and project in final semester.
- Admission Process:-
- Centerlized admission through Directorate of Technical Education (DTE) on Merit basis.
- Eligibility - Three years Engineering Diploma / B.E/ B.Tech.
- Total intake-40, Hostel facility available.
- Curriculum: - Developed with interaction of Industry and Academic Experts.
- Rubber compounding Ingredients, Testing of Rubber Chemicals, Compound and Rubber products.

- Trouble shooting in Mixing, Dipping, Calendaring, Extrusion, Building, Vulcanization Systems etc.
- Concepts of Management skills, Quality Management Systems & 5-S etc.

Laboratory, Industry Interaction and Placement:-

- Well-equipped Chemical, Physical and Polymer testing laboratory with Modern Latest testing Instruments, MDR, Mooney viscometer, Din Abrader, Demattia, Compression set, Hardness Tester & UTM etc..
- Plant Visits are arranged in various Automotive and related industries to understand actual working and established practices.
- Special efforts are made to groom the students to meet the standards of industry, both technical knowledge and soft skills.
- 100% placement till date in Tyre and Automotive Industries.

Contact:-

Vidya Bhawan Polytechnic College,

Badgaon Road Udaipur (Raj) 313001, 2451309/2452997

E-mail: vidyabhawanpolytechnic@yahoo.com, Web:

www.vbpolytechnic.org

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2492 6932 / 2492 9928
FAX: 0091 - 44 - 24480 483
EMAIL: helar@vsnl.com
Website: http://www.helarindia.com

We are a private limited company established since 1987 in Chennai as Marketing/Indenting Agent representing overseas manufacturers to facilitate supply of various raw materials to the Indian Tyre Industry. Our product profile is listed below.

COMPANIES	PRODUCTS
Junma Tyre Cord Co. Ltd, China	Dipped and Undipped Nylon6 Tyre Cord
Zhangjiagang Junma Steel Cord Co. Ltd, China	Steel Tyre Cord
Shandong Helon Polytex, China	HMLS Polyester Tyre Cord Fabric
E und P Wurtz GmbH, Germany	Internal and external release agents
Iberceras, Spain	M C Waxes
Zhejiang Hailide New Material Co., Ltd,	PET Yarn, PET Chips,
China	Printable Textile materials, PVC Flooring, Polyester Fabric and Coating Material
Karbochem S A, South Africa	Emulsion SBR / Solution SBR / High Cis PBR (Neodymium) / 3.4 Polyisoprene, TDAE extended SBR.
EMIRP LLC, Russia	SBR, SSBR, Bromo Butyl, Chloro Butyl and Tyre Cord Fabrics
China Rubber Machinery, China	Machineries for Rubber and Tyre Industry
Puyang Willing Chemicals Co. Ltd, China	Rubber Chemicals
Wuxi Hengcheng Silicon Industry Co. Ltd., China	Conventional and HDS Silica fillers
Wuhan Jinghe Chemical Co. Ltd, China	Anti Reversion Agent, Plasticizer, Peptizer, Dispersing Agent, Tackifying Resin, Reinforcing Agent, Vulcanizing Agent, Rubber Accelerator, Anti Oxidant and Adhesion Promoter Resin
Von Bundit Co. Ltd, Thailand	Natural Rubbers STR 20, RSS3
Kian lee SMR factory Sdn. Bhd, Malaysia	Natural Rubbers SMR 20
VM Rubber Company Ltd, Vietnam	Natural Rubbers SVR 3L/10
N polymers, Singapore	Natural Rubbers SIR 20
Titi latex, Malaysia	SMR 20
Demosha chemicals ltd, Mumbai India	Rubber Grade Zinc Oxide
Pala Marketing, Kerala India	ISNR 20

MAHARSHTRA INSTITUTE OF TECHNOLOGY (MIT), PUNE DEPARTMENT OF POLYMER ENGINEERING

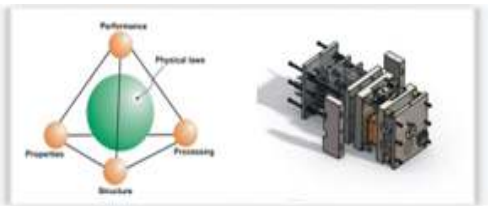
Plastics and polymers have been inseparable parts of our lives since the last decade. From the humble "carry-bag" to the auto-components to those in space crafts, it is difficult to imagine life without plastics. The polymer industry has seen unprecedented growth in the last few decades.

With only one institute offering an undergraduate and post graduate course in Polymer Engineering under the aegis of Pune University, the Department of Polymer Engineering at MIT contributes the most important component of the industry : The well-equipped Technocrat who can dexterously contribute to academics, industry and research as well.

Right from its inception, the department was fortunate enough to have towering personality of **Late Prof. M.V. Joshi** as our First Head, who can rightfully be described as the "Doyen of Polymer Engineering Education". He was instrumental in shaping the course and building basic infrastructural facilities and valuable human resource in terms of faculty members. All of this was possible due to his long-standing association with Academic institutes as well as Indian Industry. During his tenure, the department held roots and grew in leaps-and-bounds which further continued under the able guidance of **Late Prof. (Dr.) M.M. Zurale**. At present the department is progressing under the dynamic leadership of **Prof. (Dr.) Pramod S. Joshi**.

Course at a Glance….

The Polymer Engineering course, as offered, is **Interdisciplinary in Nature**, and is a confluence of **Chemical Engineering, Mechanical Engineering, Material Science and Engineering** and **Chemistry**. The course curriculum is designed to cater to the needs of Conversion Industry, Research Organizations and Academia.



The syllabus is revised after every five years, with lot of additions and deletions as per the prevalent industry conditions. The course covers fundamental subjects like Polymer Chemistry, Polymer Materials, Polymer Rheology, Mould and Die Design, Polymer Processing. Additionally, various electives are offered to students in the final year which are industry specific and include all the current and upcoming topics

like Surface Coatings and Adhesives, *Specialty Polymers, Rubber Technology, Processing and Mechanics of Composites, Polymer Physics and Characterization, Production Planning and Control, Fiber Technology, Polymer Blends as well as subjects related to Computer Modeling and Simulation.*

Our Strength ….

Well-qualified and experienced teaching faculty alongwith well-equipped laboratories cater to the needs of academic as well as research, testing and consultation activities. The interaction of Faculty members with various Industries (Reliance Industries Ltd., DSM Engineering Plastics, etc.) and Research/Academic Institutes (NCL, ARAI, DIAT, DST, AICTE, BCUD etc.) contributes to the collaborative final year projects.

Our Students…

Polymer Students Association is actively involved in various student centric activities which include organizing Invited Talks, Industrial visits and Study Tours, National level Technical Events such as "Affinity".

[Kindly visit website: www.affinity.net.in].

Our Alumni….

Our Alumni occupy prestigious positions in various Industries, Research Organizations and reputed Academic Institutes in India and Abroad as well.

Polymer Processing Laboratory

This laboratory is well-equipped with all the basic processing equipments/machines such as Injection Moulding, Extrusion Blow Moulding , Blown Film Extrusion Plant, Thermoforming, Rotational Moulding, Compression/Transfer Moulding, High Frequency Dielectric Welding Machine, Scrap granulator .

Additionally we have state-of-art CNC Milling Machine, Drilling Machine and Lathe as well which are extensively used for Repair and Maintenance as well as fabrication of Injection Moulds, Dies, etc.

Polymer Compounding Laboratory

Compounding/blending of various additives with raw polymeric material is the preliminary step prior to conversion of raw material into finished product. This laboratory provides basic infrastructure required for compounding/blending. This facility includes Twin Screw Extruder, Two Roll Mill, Brabender Plasti-corder alongwith various attachments like single screw extruder, twin screw extruder, Internal Mixer, Planetary Mixer, High speed mixer, Sigma blade mixer, Pulverizer.

Polymer Testing and Characterization Laboratory

Understanding of Structure-Property relationship is the basis of new material development, material composition and performance evaluation, Product and Process design and evaluation. The following comprehensive list gives an overview of all the facilities available in the laboratory

- **Mechanical Property Evaluation** : Computerised Micro-control Tensile Testing Machine, Izod and Charpy Impact Tester, Falling Dart Impact Tester, Friction Tester, Shore Hardness Tester, Scratch hardness
- **Thermal Property Evaluation**: Vicat Softening Temperature, Heat Distortion Temperature Tester
- **Electrical Property Evaulation** : Volume and Surface Resistivity Tester,
- **Rhological Studies** : Capillary Rheometer, Melt Flow Indexer
- **Characterization** : Fourier Transform Infra-red (FTIR) Spectrometer
- **Miscellaneous Studies** : Gas Permeability Equipment, Environmental stress cracking resistance, Gas Permeability Equipment, Carbon Black Tester, Digital Specific Gravity Tester

Polymer Composites Laboratory

Composites form a very important component of polymer technology. The laboratory is equipped with basic infrastructure to carry out experiments for fabrication of laminates using hand lay-up, spray lay-up, vacuum bagging technique.

Computer and Simulation related Facilities

Polymer Engineering **- Program Outcomes (Pos)**

1. *Engineering Knowledge* : Apply the knowledge of Mathematics, Science and Engineering fundamentals to solve complex problems in broad areas of Polymer Engineering
2. *Problem Analysis* : Identify, formulate and analyze complex engineering problems in broad areas of Polymer Engineering and reach logical conclusions using 1st principles of mathematics, natural sciences and engineering sciences.
3. *Design/Development of solutions* : The student will be able to design methodology for understanding development of new materials and their applications by applying their knowledge of polymer synthesis, reaction kinetics, structure-property relationship, testing and characterization techniques along with core principles of polymer rheology, processing, tool and product design with appropriate consideration for safety and environmental issues.

4. *Conduct Investigation of Complex Problems* : The student will be able to carry out design of experiments by analyzing and interpreting research data. They will be able to synthesize the available information and data to reach logical conclusions.
5. *Modern Tool Usage* : (a) The students will be able to understand the application of modern instrumental characterization and testing techniques related to development of existing as well as new materials; (b) The students will be able use simulation software for polymer process design, tool and product design, designing of composite materials with an understanding of fundamentals of development of the software which can create awareness regarding limitations of the software tools; (c) Also, the students will be familiar with data analyzing and interpretation software.
6. *The Engineer and Society* : Understand responsibility, duties and obligations of a Polymer Engineer and practice the profession in a responsible manner by taking into consideration societal safety, health and legal issues.
7. *Environment and Sustainability* : Understand the impact on environment during various stages of polymeric materials life cycle such as manufacturing, conversion into product, application and its disposal, thereafter, providing feasible and sustainable solutions.
8. *Ethics* : Take professional decisions with sense of ethical responsibility.
9. *Individual and Team Work* : Function effectively as an individual, and as a member or a leader in multidisciplinary and cross-cultural teams.
10. *Communication* : Develop verbal as well as non-verbal communication skills in order to effectively write technical report and other documents as well as deliver presentations.
11. *Project Management and Finance* : Understand various concepts related to project management and finance and apply them while working on various projects and assignments as a part of multidisciplinary teams.
12. *Life-long learning* : Understand the need for engaging in life-ling learning process and be prepared to take-up technological challenges in broad areas of polymer engineering.

Degree offered:
BE (Polymer Engineering)
Duration : 4 years
Intake: 60 seats
Entry requirements:
10 + 2 (H.S.C.) + JEE
Post Graduation offered:
M.E. (Polymer Engineering)
Intake : 10 seats
Entry requirements : BE / B. Tech.

ZENITH INDUSTRIAL RUBBER PRODUCTS PVT.LTD.

Quality Rubber Solutions

An ISO 9001-2008 Certified Company
An ISO 14001-2004 Certified Company

Z – 80 RUBBER

PRE-CROSSLINKED NATURAL RUBBER

Z–80 rubber is made from very high quality natural rubber and it is prepared from specially patented technology. It is a pre-crosslinked natural rubber which blends with natural rubber, SBR and other diene polymers.
It has no residual curing agent unlike other pre-crosslinked rubber. It maintains tensile strength equivalent to natural rubber with better dimensional stability after curing with sulfur and accelerator. It can be processed by using conventional rubber processing machinery. For most products Z – 80 can be used between 10 to 25 PHR.

Recommended Uses:

* Extrusion: Z-80 rubber maintain extruded shape, extrude faster and with less die swell.
* Calendering: Z-80 rubber give smoother sheets with closer tolerances.
* Open steam Cures: Z-80 rubber have less tendency to deform during open steam cure.
* Moulding: Z-80 gives good dimensional stability and flow character.

Advantages of Z-80

1. The material is translucent
2. Consistent cure characteristics
3. Better Mechanical Properties and Hardness
4. Comparable elongation
5. Good Tear Strength and Abrasion Resistance.
6. Excellent after ageing properties
7. Better Shelf life
8. Certified by the Rubber Research Institute of India

Packing:

Z-80 is a sheet form of rubber and packaged in a low density polyethylene bale wrapper. Standard packing is 25 kgs bale.

Storage:

Z-80 can be stored under normal conditions like natural rubber.Due to its stable nature it does not increase viscosity during bin storage.

Zenith Industrial Rubber Products Private Limited, A/2 Parekh Mahal, 80 Veermariman Road, Churchgate, Mumbai-400020
www.zenithrubber.com Tel: +91-22-22885888 Fax: +91-22-22885222 Email: info@zenithrubber.com

HINDUSTAN INSTITUTE OF ENGINEERING TECHNOLOGY

Hindustan Institute of Engineering Technology (HIET) was established in Chennai in 1966 in response to the need for non-formal technical education. Hindustan Institute of Engineering Technology is run by the Hindustan Engineering Training Centre (HETC) Educational society, which is registered as a Technical Education Society under the Societies Act, XXI of 1860. The institute is approved by the Director General of Civil Aviation, Government of India, for conducting Aircraft Maintenance Engineering course and by All India Council for Technical Education and the Government of Tamil Nadu for conducting Diploma courses in Automobile, Computer, Mechanical, Civil, Electrical & Electronics and Electronics & Communication Engineering Courses.

The institution has trained thousand of students in many disciplines of Engineering. It is well equipped with workshops and laboratories. HIET is widely recognized in the Asian and African continents as a premier technical institution. Various Governments including the Governments of Kenya, Tanzania, Zimbabwe, Singapore, the Commonwealth Secretariat and several aviation organizations had sponsored students to undergo courses at HIET. HIET has trained over 42,000 persons as engineers and technicians. Over 5000 of them are now working with various airlines and aviation industries in India and abroad.

Hindustan University Hindustan Institute of Technology & Science (Formerly Hindustan College of Engineering) is one of the most sought after engineering institutions in Tamil Nadu, reputed for its academic excellence, highly qualified and experienced faculty, excellent infrastructure facilities for curricular and co-curricular activities and sports and recreation facilities. The student community come from all over India in addition to foreign nationals from Bhutan, Sudan, Bangladesh, Germany, France, Indonesia, U.A.E., U.S.A., South Africa, Oman, Kenya, Rwanda, etc.

The Hindustan Group of Institutions in 1966 by our Founder Chairman **late**

Dr.K.C.G.Verghese. Way back in the sixties, our Founder realized the need for an institution that offers non-formal technical education. The **Vision** of the Hindustan Group is "To Make Every Man A Success And No Man A Failure".

The **Mission** is to provide every student with a conducive environment to achieve his/her career goals. To achieve this Mission, six world-class institutions have been established imparting high-tech education in the fields of engineering, aviation, applied sciences, architecture and management.

Under Graduate Courses

B.Tech. - Information Technology

B.Tech. - Rubber Technology

B.Tech. - Polymer Technology

B.Arch. - Architechture

Situated amidst a lush green stretch of land, spread over 120 acres, extending from Old Mahabalipuram Road up to the silver sheen of Muttukadu lake. The atmosphere is conducive for a calm and intense academic pursuit. The college is well connected to the city by the public transport buses. Apart from this, the college operates its own transport system for the convenience of students and staff members.

Computer Centre: Considering the urgency to inculcate indepth knowledge in computer technology, the college has made computer literacy compulsory for its students. Our center offers them easy access to the highly sophisticated facilities available here. The center is equipped with over 100 IBM machines and latest software packages like RDBMS, UNIX etc, two operating systems with windows NT, LINUX, Windows 98. IBM and Netfinity servers, Pentium III Processor, 256 MB memory, 20 GB hard disks constitute the configuration of the systems. The center facilitates high-speed Internet connection.

Library: The fully air-conditioned college library is well equipped with several thousand technical books with over 50 National and International Magazines and Journals. There is a seperate section for reference and stack. The library is equipped with a computerized catalogue which facilitates online reference. Besides, the library provides Inter-library Loan Service from AIRC (American Information Resource Centre), The British Council Library and has access to the vast resources available at the Hindustan College of Engineering library.

Campus Interviews are conducted by reputed organizations both of National and International standing, regularly and students get suitable and challenging positions in prestigious organizations.

A few of the organizations wherein our students are placed are:-

International: British Airways, Lufthansa Cargo India Ltd., Singapore Airlines, Malaysian Flying Club, Cathay Pacific, United Airlines(USA), Royal Jordan Airlines, Air India,

Biman Bangladesh Airlines, Gulf Air, Saudi Airlines, Path Computers(Kuwait), Ace Technologies(USA), Software Systems(Oman), Zodiac Systems(Slovak Republic Europe), Kuwait Danish Computer Company (Kuwait), Florida Software (USA). Phonenix Systems (USA), Singapore Technologies Computer Systems(Singapore), Government of Nepal and Oman, ALBA(Bahrain),NASA(USA).

In India students are working in the following reputed organizations: HCL info Systems (Chennai), Satyam Software (Chennai), Pentafour Software and Exports, Data Patterns, Mega Trends, Indian Railways, P&T Department, DSQ Software, DSRC, TCS, Wipro, Cognizant, Info Tech, Ashok Leyland, Ennore Foundries, Elcot, PWD, Corporation of Chennai, Blue star International, Silver Line, Polaris Software, ONGC, Mascon Global, TVS Electronics, CMC, Servion Global, Advennet, Syntel (india), ABN amro Bank, Bharat Overseas Bank, Crompton Greaves, GE Capital, Philips, PMR Technology, Amalgamation Repco, UCAL fuel system, VST Motors, Sundaram Motors, Saravana Body Building works, ACT India Ltd., Concorde Motors Ltd, Reliance Motor, Kinetic Engineering Ltd.

Hindustan University is located at Padur about 22 kms, South of Chennai (Madras) on the Rajiv Gandhi Salai. It is situated amidst a lush green stretch of land, spread over 120 acres, extending from OMR to the silver sheen of Muttukadu lake. The atmosphere is conducive to a calm and peaceful academic pursuit. The college is well connected to the city by the public transport buses. Apart from this, the college operates its own fleet of buses for the convenience of the students and staff.

Hindustan University,

Old Mahabalipuram Road (IT Highway),

Padur, Kelambakkam - 603 103.

Tamil Nadu, India.

Phone: +91 - 44 - 2747 4262 / 4385 / 4395

Fax: + 91 - 44 - 2747 4208

Email: hetc@vsnl.com

Administrative Office:

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St. Thomas Mount,Chennai - 600 016.

Tamil Nadu, India.

Phone: + 91 - 44 - 2234 2155 / 0980
2508 / 0968

Fax: + 91 - 44 - 2234 2170 / 2233 3848

Email: hetc@vsnl.com

INDIAN INSTITUTE OF POLYMER SCIENCE

B 63, G.T.K Road, Industrial Area, Delhi 110033,
Helpline +91 99908 17420; Email: iipsdelhi@gmail.com Website: www.iipsedu.net

Rubber Training Calendar (Distance Mode)

1. Diploma in Rubber Technology (one year) last date of receiving application: July 30,2015
2. Master of Polymer Science (two year) last date of receiving application: July 30,2015
3. Bachelor of Technology in Rubber and Polymer Engineering (three years) last date of receiving application: July 30,2015

Rubber Training Calendar (Regular Mode)

1. Rubber Compounding (3 days) - July 10, 2015
2. Adhesion of Rubber (1 day) - August 3, 2015
3. Rubber Mold Design (3 days) - September 12, 2015
4. Polymer Science and Technology (4 days) - November 6, 2015

For more details, please visit our website.

Website: www.iipsedu.net

DEPARTMENT OF POLYMER SCIENCE AND RUBBER TECHNOLOGY
COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY
COCHIN 22, KERALA.

Web: psrt.cusat.ac.in Mail: hodpsrt@gmail.com Tel : 0484 2575723

INTRODUCTION

The Department of Polymer Science and Rubber Technology was instituted by the University in1971 in collaboration with the Rubber Research Institute of India (RRII), Kottayam, recognizing The importance of natural rubber and its significance in the Indian economy.

The B.Tech (Polymer Science and Rubber Technology) was started in 1972 as a two-year post- B. Sc. course. In 1978 it was converted to a three-year B. Tech. course admitting students who Have completed B. Sc. degree (10+2+3) in Chemistry or Physics. In 2004 the course was Revamped completely to make it a four-year-long B. Tech. for which the admission requirement Was Plus-two (10+2). Since then the admission is through an All-India Entrance test conducted By the University. In 2009, the course was redesignated as B. Tech. (Polymer Science and Engineering) by including new engineering papers but without compromising the rubber Technology content. The in-take per year is limited to 20 students. This course, supported Completely by the Government, is a run with a tuition fee of Rupees eight thousand only per Year. The students are also eligible for official hostel accommodation.

The M.Tech. (Polymer Technology) course was started in 1985 with assistance from UGC and AICTE. The intake is 10 students per year. Selection is based on GATE score.

A very active placement cell is the highlight of the Department. This year already five companies Have visited and three more are expected soon for recruitment. .

Research leading to Ph. D. was started in 1980. Till now 87 students have been awarded Ph.D. And 39 research scholars are on the rolls. Well qualified members of faculty and state-of-the art Facilities are the highlights of the Department. The total

number of publications in International Journals from the Department has crossed 800. Professionals belonging to the past batches Now adorn key positions in polymer industries and research institutions in India and abroad.

The Department has been awarded a financial assistance of Rs 53 Lakh by the DST under the FIST programme. The Department has undertaken several research projects sponsored by DST,UGC, AICTE, BARC, NPOL, Volkswagen foundation, Germany etc. The Department has Successfully concluded a three-year-long academic collaboration with the Technical University,Eindhoven and Twente University of The Netherlands. Three students have completed Ph.D. Under this scheme.

Polymers and related areas. SPOT routinely organizes workshops, international seminars, Invited talks and alumni meets.

COURSES

1. B.Tech. in Polymer Science and Engineering The B.Tech. Course in Polymer Science and Engineering is an eight semester programme. The Course offers seven semesters of lectures and laboratory classes followed by a final eighth Semester consisting of an industrial research project and training. The research project is Carried out in a reputed industry or research institution. The training programme is conducted in An industry and gives the candidate a thorough insight into the working of a rubber/plastic Processing industry.

Admission requirements

Pass in Plus Two examination of the State of Kerala with mathematics, physics and chemistry As optional subjects or any other examination accepted as equivalent thereto securing a Minimum of 50 % marks in mathematics and 50% marks in mathematics, physics and chemistry Put together. The number of seats available for the course is 20

Fee Structure.

Tuition fee per semester - Rs. 8000/ (Rupees eight thousand only). Students are eligible for Official hostel accommodation. The hostel rent per month is Rs. 150/ (Rupees one hundred and Fifty only).

2. M.Tech in Polymer Technology

The M.Tech. Course in Polymer Technology is a four semester programme, wherein the first two Semesters include lectures, lab, seminar etc. The third and fourth semesters are devoted to a Project related to a relevant area of polymer technology either in an Industry/Research Institution or in the Department.

Admission requirements

I. A graduate degree with 60% marks in the following subjects from the universities in Kerala

   (a) B. Tech. in Polymer Science and Rubber Technology or

   (b) B. Tech. in Chemical Engineering/Technology or

   (c) M.Sc. in Polymer Chemistry/M.Sc. Chemistry/M.Sc. applied Chemistry

   OR any examination of other universities recognized by the CUSAT as equivalent to any of The above

II. The admission is based on the GATE score. In case of non-availability of candidates with GATE score, admission will be based on a Departmental test. The number of seats is limited to 12. Two seats are reserved for sponsored candidates from Public/Private sector Industries/Research organizations in the field of Polymer Science, Curriculum

The curriculum includes detailed Study of the following Topics
Polymer Science/Technology
Rubber Processing & Product Manufacture
Plastic Processing
Tyre Technology
Polymer Product Design
Introduction to Mould and Die Design
Computer Programming

Contact Us.

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Contact Address
Professor and Head
Department of Polymer Science and Rubber Technology
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Kerala , India
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E mail hodpsrt@gmail.com

FERRIS STATE UNIVERSITY

IMAGINE MORE

The Rubber Technology program at Ferris was started in 1998 based on an urgent need in the rubber industry for technically trained personnel. It is the only Rubber Technology associate degree program in the United States, so many companies are competing for graduates of the program. Approximately one million people across the country work in the rubber industry, making it one of our largest employers.

This innovative program provides students with a background that includes topics such as the mixing and testing of rubber compounds, the processing of rubber compounds into finished products that meet customer requirements, product and mold design, and materials selection and properties. Classes emphasize hands-on learning, using the same type of equipment that is currently used in industry.

Many A.A.S. graduates continue their education at Ferris and receive their B.S. degree in Rubber Engineering Technology in two additional years.

Our Plastics program has consistently had 100% placement at excellent annual salaries. Even in the present economy, we still expect 100% placement at comparable salaries.

Here is a list of some of the high-profile companies who hire our graduates:

- The Tech Group
- Goodyear Tire and Rubber
- General Motors Corporation
- Delphi
- Dow
- Lacks Industries
- Orbis Corporation
- Saint Gobain
- Sonoco
- Stihl
- Visteon
- BASF

10-week internships in industry often lead to job opportunities. Some out-of-state companies even pay room and board in addition to salary to attract our interns

GIVING OPPORTUNITIES

National Elastomer Center's … **Share The Legacy**

Gifts to the National Elastomer Center's Share The Legacy, support the Ferris Plastics and Rubber Endowment. These funds are dedicated to enhancing the quality of education that Ferris Plastics and Rubbers students receive by providing: student scholarships and recruitment; equipment upgrade, maintenance and repair; and faculty/student development.

When you Share The Legacy, you will allow us to increase the level of support in the program and impact the quality of students interested in the polymer industry. Your support will also publicize your commitment to enhancing excellence in education.

Share your legacy to enhance excellence in education and the polymer industry through these naming opportunities:

- The Mural Project
- Classroom & Laboratories

For more information, please contact:

Bob Speirs, Program Coordinator
Plastics & Rubber Engineering Technology
231-591-2964/ robertspeirs@ferris.edu
Karen Lerew, Advancement Officer
College of Engineering Technology
231-591-2895 / karenlerew@ferris.edu

SCHOLARSHIPS

International students are eligible to apply for our merit based scholarships, such as the WNF scholarship,David Pao Scholarship, and more. Once students complete a certain number of credits, they are eligible for more scholarships.

EMPLOYMENT

We offer several on campus employment opportunities to our students. Once authorized, students may pursue an internship off-campus, allowing them to gain work experience in their field.

Call Us

1(231) 591-3915

Email Us

international@ferris.edu

Website

www.ferris.edu/international/admissions

Send Your Documents
Ferris State University
Office of International Education
1301 S. State Street IRC 134
Big Rapids, MI 49307 USA

Akron Polymer Training Center

The University of Akron's 18,500-square-foot Akron Polymer Training Center is a teaching facility that serves the region's academic and industrial needs by offering a wide variety of non-credit plastic and rubber training courses.

Rubber/Elastomer Technology and Applications for the Tire Industry - 2 Day Course

Course Overview

This course is designed for chemists and engineers working in the rubber/polymer industry related to materials, design, manufacturing, and sales/technical service for products such as tires, engineered rubber products, etc. Participants will gain a basic understanding of key interactive variables involving design, materials, equipment, and process parameters for major rubber products used in global markets.

Course Outline

1. Elastomers - Natural and Synthetic - NR, SBR, BR, IIR, EPDM, NBR and CR
2. Product service requirements dictating the selection of base polymer(s) and compounding materials - carbon black, silica, cure systems, process aids, and antisera ad ants for required components.
3. Processing and control systems for mixing, calendaring, extruding, shaping, and curing emphasizing green strength, tack, bloom, scorch, interfacial adhesion/cure rates, and compatible compound rheological properties with shear rates available from equipment/machinery employed.
4. Integration and optimization of design, materials, processing, and applicable test essential for consistent defect free product that will meet various regulatory standards and service performance requirements.

Basic Elastomer/Rubber Technician Class - 2 Day Course

Course Overview

This hands-on course is designed for the entry-level rubber technician or as a review. The course will familiarize the student with formulation construction, discussion of compounding ingredients, operation of laboratory size mixers and mills, and sample preparation. Testing areas such as rheology, viscosity, physical testing, abrasion, and dynamic properties will also be covered. Safety will be key in all topics.

Polymer Science for Engineers - 3 Day Course

Course Overview

This course is designed to introduce engineers and engineering students to the basic concepts of polymer science and polymer engineering. It provides a broad overview of polymer materials, thermoplastic and thermoset polymers, polymer synthesis, polymerization mechanisms, copolymerization, block and graft copolymers, thermoplastic elastomers, mechanical properties and morphology of polymers in glassy, rubbery and viscous liquid states and the relationship between polymer molecular structure and glass transition and melting temperatures. The mechanical properties of polymers are compared with those of metallic materials. The course also provides an introduction to rubber elasticity, rubber technology and viscoelastic properties of polymers including creep, stress relaxation and dynamic mechanical properties. Methods for characterizing the flow properties of polymer melts and the polymer processing methods of extrusion, injection molding, blow molding, thermoforming and rotational molding are reviewed. The textbook, *Introduction to Polymers*, is included in the price of the course.

Introduction to Polymers by Robert J. Young and Peter A. Lovell

Course Outline

1. Introduction to Polymer Materials
2. Thermal Transitions in Polymers - Tg & Tm
3. Step-Growth Polymerization
4. Free Radical Addition Polymerization
5. Ionic Polymerizations - Cationic, Anionic, Stereospecific Coordination Catalyts and Ring Opening Polymerization
6. Copolymerization and Copolymers (Random, Block and Graft)
7. Polymer Characterization Methods--Molecular Mass and Chain Microstructure
    1. Osmometry, Light Scattering, Solution Viscosity and GPC
    2. Spectroscopic Methods -- IR and NMR
    8. Commodity Thermoplastics and Polymer Film Properties and Processing
9. Engineering Thermoplastics, Polymer Additives, Twin-Screw Mixing Extruders
10. Engineering Thermosets
11. Semi-crystalline Polymers and Fiber Spinning Processes (Commodity and Ultrahigh Modulus Fibers)
12. Elastomers and Rubber Technology
13. Rheological Properties of Polymers
14. Polymer Processing - Extrusion and Injection Molding
15. Polymer Processing - Blow Molding, Thermoforming, Rotational Molding, Compression and Transfer Molding
16. Polymer Solutions, Polymer Blends, Thermoplastic Elastomers and Ionomers
17. Viscoelastic Properties of Polymers

Chemistry and Technology of Polymeric Materials used in Medical Devices - 1 Day Course

Location: Akron Polymer Training Center, Akron, OH 44325-5404

ourse Overview

Intended for newcomers to the medical device industry, this course provides an introduction to FDA and EU regulations as related to medical devices including definition of key terminology, overview of GMP, device classification, listing and approval processes and how to navigate the FDA website to access key resources provided. A broad range of materials are discussed. This includes conventional elastomers such as silicones, natural and synthetic polyisoprene, and polyisobutlyene; thermoplastic elastomers such as TPEs, TPVs, POEs, Copolyamides and TPUs. Engineering plastics such as polyesters, nylons, acetals, polycarbonates, conventional polyolefins and cyclic polyolefins are discussed. Applications identified include orthopedic devices, ophthamolics, viscoelastic gels, catheters, tubing, stoppers, drapes, syringes, transdermal drug, medical machinery parts and the like.

- Rubber/Elastomer Technology and Applications for the Tire Industry - 2 Day Course
- Basic Elastomer/Rubber Technician Class - 2 Day Course
- Polymer Science for Engineers - 3 Day Course
- Chemistry and Technology of Polymeric Materials used in Medical Devices - 1 Day Course
- Understanding Dynamic Properties of Rubber and Rubber Products - 2 Day Course
- Polymer Compounding, Formulating, and Testing of Plastics, Rubber, Adhesives, and Coatings - 3 Day Course
- ASTM Rubber Testing: Selecting, Performing and Interpreting ASTM Rubber Test Methods - 2 Day Course
- Color Theory and Applications - 2 ½ Day Course
- Understanding Raw Materials, the Building Blocks of Rubber Compounding - 1 Day Course
- Compounding for Performance - 2 Day Course
- Solving Problems in Rubber Compounding and Processing - 1 Day Course
- Elastomer Molding Technology - 2 Day Course
- Engineered Rubber Products: Materials, Product Design Principles and Fundamentals of Processing - 2 Day Course

Summer 2015

Rubber Adhesion and Adhesives - 2 Day Course

Returning Spring 2016!

Rubber and Plastics Failure Analysis: Physical and Chemical Analysis Techniques - 1 Day Course

Summer 2015

Rubber Bushing Design for Automotive and Commercial Applications - 2 Day Course

Returning Spring 2015!

Silicone Elastomeric Product Technology - 3 Day Course

Fall 2015!

Contact Us

225 E. Mill Street

Akron, Ohio 44325-5404

Phone:

Bob Seiple, APTC Interim Director

(330) 972-8303

Fax:

(330) 972-8141

at aptc@uakron.edu to be added to our mailing list. Please include your name, company name, address, phone number and e-mail address.

Rubber Division ACS. 411 Wolf Ledges Pkwy Suite 201 Akron, Ohio. 44311. USA

Basic Rubber Technology Online Course

1. **What Is This Course Like?**
   - Once you register and purchase the course, we will mail your copy of the textbook to you.
   - After you receive your textbook, you should then read each chapter before taking the test.
   - ALL tests are taken online and graded instantly, so you know what you understood or need to study more.

2. **Recommended For:** People with little or no prior technical rubber industry background whose daily work now is connected with the rubber industry.

3. **Associated Text:** *Basic Elastomer Technology*, edited by Drs. K. C. Baranwal and H. L. Stephens, 2000

4. **Course Topics:**
   - Introduction to Polymer Science
   - The Compounding and Vulcanization of Rubber
   - Fillers: Carbon Black and Nonblack
   - Processing and Vulcanized Tests
   - Physical Testing of Vulcanizates
   - Natural Rubber
   - Styrene-Butadiene Rubbers and much more!

5. **Costs:**
   - Members = $385.00
   - Non-members = $485.00

6. **CEUs Available Upon Completion: 5**

Intermediate Rubber Technology Online Course

1. **What Is This Course Like?**
   - Once you register and purchase the course, we will mail your copy of the textbook to you.
   - After you receive your textbook, you should then read each chapter before taking the test.
   - ALL tests are taken online and graded instantly, so you know what you understood or need to study more.

2. **Recommended For:** People whose daily work involves the use of rubber and rubber-like materials. For the experienced individual, this course will serve as both a review and an update. Newer people to the field will be able to use this course as a continuation of education after completing the Basic Rubber Technology course listed above.

3. **Associated Text:** *Elastomer Technology: Special Topics* edited by Drs. H. L. Stephens and K. C. Baranwal

4. **Course Topics:**
   - Elastomers and Their Usage
   - Physical Properties and Their Usage
   - Compound Analysis
   - Engineering Design
   - Processing Aids
   - Plasticizers
   - Vulcanization and much more!

5. **Costs:**
   - Members = $385.00
   - Non-members = $485.00

6. **CEUs Available Upon Completion: 9**

Advanced Rubber Technology Online Course

1. **What Is This Course Like?**
   - Once you register and purchase the course, we will mail your copy of the textbook to you.
   - After you receive your textbook, you should then read each chapter before taking the test.
   - ALL tests are taken online and graded instantly, so you know what you understood or need to study more.

2. **Recommended For:**

This course is designed for highly motivated professionals. Special emphasis is placed on the theoretical as well as the practical aspects of polymerization, polymer structure, rheology and rubber elasticity concepts and behavior.

3. **Associated Text:** *Science and Technology of Rubber,* edited by Drs. J. E. Mark, B. Erman and E. R. Eirich

4. **Course Topics:**
   - Rubber Elasticity: Basic Concepts and Behavior
   - Polymerization
   - Structure Characterization in the Science and Technology of Elastomers
   - The Molecular Basis of Rubber-Like Elasticity
   - Dynamic Mechanical Properties
   - Rheological Behavior and Processing of Unvulcanized Rubber and much more!

5. **Costs:**
   - Members = $385.00
   - Non-members = $485.00

6. **CEUs Available Upon Completion: 12**

Main Rubber Division Office Information
We are located at
411 Wolf Ledges
Ste 201
Akron, OH 44311
USA
Get Directions From Google Maps
Our phone number is
330-972-7814
http://www.rubber.org/

RUBBER TECHNOLOGY EDUCATION WORLDWIDE

Sr. No.	Name of University	Name of Course	Contact details
01.	Ferris State University College of Engineering Technology JOH200.1009 Campus Drive o Big Rapids, Michigan USA - 49307	Rubber Engineering Technology	Ph: (231) 591-2890 o College Fax: (231) 591- 2946 http://www.ferris.edu/HTMLS/colleges/technolo/design-mfg/Rubber/homepage.htm
02.	The University of Akron Ohio, USA	Rubber Technology	The University of Akron, OH 44325 Phone: 330-972-7111 http://www.uakron.edu
03.	ACS Rubber Division, Akron, USA	Various training programmes	http://www.rubber.org Rubber Division ACS. 411Wolf Ledges Pkwy Suite 201 Akron, Ohio. 44311. USA
04.	German Institute of Rubber Technology (DIK), Hannover, Germany	Advance-study program in rubber technology Rubber Technology Beginners	E-Mail: PR-DIK (at) DIKautschuk.de http://www.dikautschuk.de/english/aktiv/index.html
05.	FH Aachen University of Applied Sciences, Aachen, Germany	Polymer Science & Technology	Address: Bayernallee 11, 52066 Aachen, Germany Phone: +49 241 60090 https://www.fh-aachen.de/en/
06.	London Metropolitan Polymer Centre; UK	B.Sc Polymer Engineering	Admissions Office London Metropolitan University 166-220 Holloway Road London N7 8DB Course enquiries: +44 (0)20 7133 4200 http://www.londonmet.ac.uk
07	Polytechnic Institute of Brooklyn 333, Jay street Brooklyn 1 N.Y.		

About Training & Skill Development

RSDC CREATES INDUSTRY SKILLS

How to get Skilled Manpower in Your Organization

To meet the rising demand for skilled workforce for the rubber sector, RSDC launches new Skills campaign called ***"Skill Your People, Grow Your Business"*** across the country, which would help the industry recruit the right skills.

RSDC has developed National Occupational Standard (NOS) for training on specific job roles of the shop floor in consultation with rubber experts, industry and other stakeholders of the sector. NOS are developed for specific job roles, so that the trainings are actually aligned with industry requirement for the specific occupation and job role and candidate trained thereby can start contributing effectively to the production process.

Skilled Manpower Helps in

- ✓ ***Increasing the productivity***
- ✓ ***Decreasing the wastage of materials***
- ✓ ***Increasing the profit margins***
- ✓ ***Reducing the accidents/incident levels as trained workers are learnt about health and safety measures in NOS based trainings***
- ✓ ***Reducing the number of customer complaints and export rejections***

How to Participate

Companies can share their training requirements for in-service professionals and fresh manpower required for various job roles with RSDC.

For further details contact us at info@rsdcindia.in or call at 011-41009347/8

RSDC
RUBBER SKILL DEVELOPMENT COUNCIL

Key Challenges of the Industry

- *Rubber sector is facing huge challenges in terms of skilled manpower.*
- *There is huge gap of skilled required / skilled available in the work place.*
- *Industries hire fresh unskilled candidates and provide in house training which results in significant delay.*

"RSDC's NOS based trainings helps organization increase its profit margin."

Rubber Skill Development Council (RSDC), a Sector Skill Council for the rubber sector set up by All India Rubber Industries Association (AIRIA) & Automotive Tyre Manufacturers' Association (ATMA) in Collaboration with NSDC is focusing on skill development & training needs of the sector.

RSDC's key objectives are conducting research, quality assurance and improving delivery mechanism for skilling and up-skilling professionals in the rubber sector.

Promoted by

AIRIA

ATMA

N·S·D·C National Skill Development Corporation

Contact us: Ramakrishna Dalamia Wing, FMD House (4th Floor), 4/2, Siri Fort Institutional Area, August Kranti Marg, New Delhi
Tel: +91 11 41009347-48 | **Fax:** 91 11 41004899 | **Email:** info@rsdcindia.in | **Website:** www.rsdcindia.in

RUBBER SKILL DEVELOPMENT COUNCIL

RSDC has been constituted under the aegis of National Skill Development Corporation (NSDC), in collaboration with All India Rubber Industries Association (AIRIA) and Automotive Tyre Manufacturers Association (ATMA), with the aim to identify and fulfill skill development needs in the Rubber sector. The RSDC will encourage the industry to employ skilled and certified manpower. It will create a dynamic LMIS to keep track of the labour market skill gaps, frame Occupational Standards, facilitate development of practical and high quality training content, ensure adequate availability of faculty through Train The Trainer initiatives, build accreditation and certification mechanisms and encourage capacity building through private sector participation. In the process, RSDC will indulge in preparing a catalogue of skill sets, range and depth of skills to facilitate individuals to choose from. RSDC has been registered as a Section 25 company.

The purpose of RSDC is to ensure the generation of skilled manpower in both the tyre and the non-tyre sectors, provide employment opportunities to youth across the nation, create career paths in roles existing within the unorganized and organized segments of the rubber industry and ensure active participation of the industry in absorption of skilled manpower generated through RSDC.

Vision:

RSDC is the rubber sector's skill development and standard setting body. RSDC proposes the broad activities:-

- Standardization of job roles / skill types through development of National Occupational Standards (NOS).
- Identification of critical job roles where major skill gaps exist
- Develop Standards and Assessment Tools
- Capacity building of the Rubber education and training system
- Plan and execute Training of Trainers
- Maximum participation of private training institutes
- Build affiliation.

- Certification and examination of trainees
- Enable maximum employment of RSDC certified personnel
- Establish well structured, sector specific Labor Market Information System (LMIS)

Mission:

As an overview, RSDC aims to address the following:-

- Setting up Labour Market Information System (LMIS) to assist planning and delivery of training
- Identification of skill development needs and preparing a catalogue of skill types
- Develop a skill development plan and maintain skill inventory
- Developing skill competency standards
- Standardisation of affiliation and accreditation process
- Capacity creation in skill development
- Plan and execute training of trainers
- Promotion of academies of excellence

Mandate:

RSDC's vision is to impart training to over 6 lakh persons for entry level jobs and over 1 lakh in service personnel in the next 10 years so as to ensure the generation of skilled manpower in both the tyre and the non-tyre sectors, provide employment opportunities to youth across the nation, create career paths in roles existing within the unorganized and organized segments of the rubber industry and ensure active participation of the industry in absorption of skilled manpower generated through RSDC.

OBJECTIVES OF THE RSDC

- Setting up LMIS to assist planning and delivery of training - the first step in bridging the skills gap would be develop a sector specific and credible Labour Market Information System (LMIS) which would provide the basis on which to plan for the skill development initiatives in the sector across various regions.
- Identification of skill development needs and preparing a catalogue of skill types - it is important to create a catalogue of standardised skill types across the industry to develop a common language and understanding amongst

all stake holders. The skill development needs of the sector will then, emerge through the LMIS as well continuous interaction with all stake holders.

- Develop a sector skill development plan and maintain skill inventory - a comprehensive skill development plan will have to be developed based on the identified skill development needs so as to best utilise all available resources as well as take necessary steps to build adequate capacities in the training infrastructure.
- Developing skill competency standards and qualifications - one of the main tasks of the SSC will be to develop and maintain the National Occupation Standards (NOS) of all the skill types in their sector. These will lay down the skill competency standards and qualification for each job role.
- Standardisation of affiliation and accreditation process as well as participation in affiliation, accreditation, standardisation - the main role of the SSC would be to standardise the accreditation and certification process to maintain quality in the training process as well as trained manpower.
- Capacity creation in skill development by encouraging maximum private players participation in skill development as well as creating skill development infrastructure.
- Plan and execute training of trainers - to ensure maximum coverage of the workforce in the skill development initiatives, adequate number of trainers have to be available at all times. This requires a planned intervention to train and certify adequate number of trainers before they are actually required.
- Promotion of academies of excellence - A few model training institutes with best-in-class infrastructure, processes and faculty would need to developed as Academies of Excellence, to laydown standards in training for other players in the sector to follow/ emulate.

Key drivers of growth of Rubber Industry

- India's booming auto sector driving production of tyres, tubes, and components
- Overall growth in manufacturing pushing consumption in industrial items like industrial belts, hoses etc.

- Growing domestic market and favourable consumer demographics
- Increasing demand from key user segments
- Rising demand for lifestyle products
-

RSDC PERKS TO THE INDUSTRY

- To provide skilled manpower to meet the requirement of the Industry in coming years
- To offer tailor made courses that satisfy the industry's need for technical professionals
- To frame certifications & accreditations for short &mid-term courses in various trades of rubber industry both for new people joining industry and skill enhancement of existing employees
- To design and offer courses to create career opportunities across functions for skill development and enhancement as par industry standard.
- To set standards of Quality in the skills required for different job roles in rubber Industry
- To frame Occupational Standards and competency matrix for job roles in the rubber industry & align the training content and curriculum with them
- To develop training programs, which are application based, with simulation or live projects, as per the requirement of the industry
- To ensure training of adequate number of trainers to cope up with the skill development requirements of the industry and encourage private players to participate in the skill development initiative to build capacities.

ABOUT INDIAN RUBBER INDUSTRY

India is the 3rd largest producer and 2nd largest consumer of rubber in the world. The rubber industry consisting both tyre and non-tyre clocked a turnover of around Rs. 63,000 crores (USD 1,130 million) in 2011-12 with a CAGR over last 3 yrs of more than 10%. The industry employs an estimated half million people currently, and is capable of creating close to an additional half million jobs in next 10 years. There are about 4,300 units in non-tyre industry producing a large variety of items consuming 38% of rubber. Most of these units (approx. 90%) are SSI/Tiny units and labour intensive .

Although, rubber product manufacture started in India, in the year 1920, the

industry has been mostly inward oriented, catering to the needs of the vast domestic market. But in the recent past the country has been transforming itself into a major rubber product exporter as well, thanks to the economic policies being pursued by the government and the market integration brought about by the WTO /Regional Trade Agreements.

Key drivers of growth of the industry are -

- India's booming Auto sector driving production of tyres, tubes, and components
- Overall growth in manufacturing pushing consumption in industrial items like industrial belts, hoses etc,
- Growing domestic market & favourable consumer demographics
- Increasing demand from key user segments
- Demand for lifestyle products
- No significant threat of any substitute to rubber etc.

In the current scenario most of the skill learning in the industry happens through unstructured, on-the job training (OJT). While the bigger, organized companies mainly in tyre manufacturing sector hire matriculates, ITIs & Diploma holders and give them structured OJT training, the MSME tyre units & almost entire non-tyre manufacturing sector hire even non-matriculates and the OJT, if any, is totally unstructured. The new apprentice is taken as a helper and learns various aspects of the job with time, under the guidance of his seniors. As such, there has not been much improvement & development in skill levels in the industry.

The number of institutions running certification courses with rubber specialisation are very far and few. Most of the trained professionals are either chemical engineers or Diploma in Chemical Engineering from regular engineering colleges. There is an urgent need to develop modular, short term skill development programs for frontline shopfloor workers and supervisors. It is also very important to build capacity and affordability in the training infrastructure to encourage persons from

the less educated and lower income groups to opt for such courses and develop fruitful careers in the Indian Rubber Industry.

About RSDC Logo

The RSDC logo represents the gradual growth of a person through up-skilling. At another level it also signifies the supporting role played by RSDC in propelling the person on a growth path. The green circle represents a green eco system that RSDC aims at by up-scaling efficiencies and productivity through a skilled manpower.

Rubber Skill Development Council
PHD House (4th Floor), Opp. Asian Games Village,
Siri Fort Institutional Area, New Delhi - 110016
Tel: +91 11 41009347, 41009348
Fax: +91 11 41004899 | Email: info@rsdcindia.in

RSDC'S AFFILIATED TRAINING PARTNERS

Hari Shankar Singhania Elastomer and Tyre Reseach Institute (HASETRI) - www.hasetri.com

HASETRI is India's first and foremost independent Research and Testing Center, which fulfills the Nation's need for developing newer and better technologies for Elastomer and Tyres. The primary goal of this institute is to foster development and evolution of new technologies for Rubber and Allied Industries for domestic and international markets as also to develop technical manpower for the industry. This Institute was established in October 1991 as an independent Research and Testing Laboratory, to cater to the need of rubber and allied industries at National and International level. HASETRI is recognized under SIRO (Scientific and Industrial Research Organization) by the Department of Scientific & Industrial Research (DSIR), Govt. of India. HASETRI is also acknowledged by the Indian Institute of Technology (IITs) and other universities for registration leading to higher studies.

Indian Rubber Institute (IRI) - www.iri.net.in

Indian Rubber Institute (IRI), is a professional body of rubber technologists, engineers, scientists, academicians and other professionals and organizations associated with the rubber and allied industry in India. A non-profit organization of 63 years standing, IRI was constituted as a national body and got registered on 25th May 1987 under the West Bengal Societies Act XXVI of 1961 no. S/55295 of 1987 - 88 and has since been continuing its educational and training activities. With headquarters at Kolkata, IRI has been functioning from seven branches at Chennai, Delhi, Karnataka, Kerala, Kolkata, Mumbai, and Rajasthan.

LabourNet - www.labournet.in

LabourNet was started in the year 2006 as an initiative of Movement for Alternatives for Youth Awareness (MAYA), a non-governmental organization based in Bangalore. It began largely as an effort to provide a one-stop platform for unorganised sector workers to obtain services which are currently available and accessible by formal sector workers. Today, LabourNet stands as a separate sustainable entity which is exclusively working towards building an ecosystem that will empower the informal sector workers - estimated to be about 400 million -and provide access to this workforce for economic development.

LabourNet is a social enterprise that creates sustainable benefits for workers in

the informal sector by offering them a platform to access services. It provides financial inclusion, social protection and welfare services to unorganised workers, builds capacities of workers and markets their services to customers. LabourNet focuses on improving workers lives. LabourNet is supported by National Skill Development Corporation of India, besides other funding and knowledge partners. LabourNet is the Certified partner of NSDC.

IL&FS Skills Development Corporation Limited (IL&FS Skills) - www.ilfsskills.com

IL&FS Skills is promoted by the IL&FS Group as a part of its large scale social infrastructure initiative under the realm of IL&FS Education and Technology Services Limited in partnership with National Skill Development Corporation (NSDC). It is one of the largest Public Private Partnership model set up in the Skill Training and Vocational Education arena of India.

IL&FS Skills has till date trained 1.5 million people and aims12 at establishing 100 IL&FS Institute of Skills (IIS) and training 4 mn people by 2022 offering training in multiple trades across India. These Institutes are established at industrial clusters (skilled labour demand areas), and labour supply areas to bridge the industry - learner gap. The company is also one of the largest skills provider offering training in 70+ courses in Manufacturing, Engineering, Construction and Services sector.

The IL&FS Skills model has been successful with different learner groups (including adult learners, persons with disability, long term unemployed and graduates), in difficult geographies (extreme weather conditions, hilly areas of North East) as well as conflict zones with crippled economies due to long periods of unrest and terrorism (states of J&K, Left Wing Extremism (LWE) etc).

BASIX Academy for Building Lifelong Employability Ltd. (B-ABLE) - www.b-able.in

B-ABLE is the vocational training arm of the BASIX group of livelihood promotion institutions focusing on developing the employability of youth through skill training for more than 20 years. B-ABLE is a Vocational Training Organization set up in 2009 by a social entrepreneur, Mr. Sushil Ramola, an IIM-A graduate with 33 years of corporate experience and is the first training partner of National Skills Development Corporation (NSDC) which is an entity created by Ministry of Finance through public-private partnership (PPP) model for promoting skill building across the nation, and is today one of the key coordinating agencies for skill training in India.

In the 5 years of its existence, B-ABLE has implemented training programs

across 21 states of India in various sectors including retail, hospitality, agriculture, automobile, BPO and others covering over 64,000 candidates, of which more than 65% are now productively engaged in jobs or are self-employed. B-ABLE runs both Government funded (State Livelihood Missions/Ministry of Rural Development, etc.) and user funded projects (Essilor, Tata Motors, SHELL, etc.).

Indian Rubber Manufacturers Research Association (IRMRA) - www.irmra.org

IRMRA is Premier Research and Development organization established in 1959 to serve the Rubber & allied industries. IRMRA affiliated to the Ministry of Commerce & Industry, DIPP, Govt. of India, has modern state of art scientific and analytical instruments and fully equipped with facilities for design & development, product development, validation and testing of rubbers and allied materials. Govt. of India has funded to create this state of art R&D center to support Rubber Industries & end users to improve the quality of rubber products.

Rural Education & Environment Protection Trust (REEP TRUST) - www.reepcc.org

REEP a non-profit organization registered under Trust Act. Since its inception, REEP has been conducting Entrepreneurship Development Programmes, Skill Development Programmes, Awareness Camps, Education programs et., under several schemes of Govt. of India & Govt. of Tamilnadu. Our activities are wide spread through out Tamilnadu. So far trained 37,200 candidates since inception.

Over the years the Institute has gained immense experience and expertise in the areas of entrepreneurship development, technology, management, extension and information services. REEP's inherent capacity to innovate together with its top-class infrastructure has enabled the institute to excel in its endeavours towards SKILL TRAINING. From the time of inception, REEP has been providing ample support to trainees and has evolved to be the best in offering services like Financial guidance, consultancy, information, training and extension to not only enterprises but also to concerned sector placements.

Elysium Technologies Private Limited (ETPL) - www.elysiumtechnologies.com

Elysium Technologies Private Limited (ETPL) is established in 1999 and managed to emerge as one of the largest global solutions firm in Asia and a

leading provider of information technology and business process outsourcing services. With 17+ years of proficiency in the IT sector, ETPL has initiated Skill Development Training to the aspiring learners from all regions of TamilNadu.

ETPL imparts skill development training to the aspirants to increase productivity of the existing workforce and increase the self-employment opportunities. Our training experts are driven forth to deliver best-in-class training sessions to impart the industry-relevant skills to the learning communities. Over the years, ETPL has facilitated and supported a network of 1000+ students to achieve a successful career and maximize their earning potential.

RVS RISE SKILLS SOLUTIONS PVT LTD (A Group company of RVS Educational Trust) www.riseindiaglobal.com

Rathinavel Subramaniam Educational Trust (RVSET) was established in 1983 as a public charitable Trust, in fond memory of Master Rathnavel Subramaniam the elder son of the chairman Lion. Vijayashree Dr. K. V. Kupusamy and Smt. K. Padmavathy, with objectives to create facilities for education, health care and upliftment of the poor and the downtrodden especially of rural regions. Today, RVS Educational Trust glows as one of the laudably leading educational organizations of our country, conceived with a frame work of corporate structure under the dynamic captaincy of Dr. K. V. Kupusamy, a well known philanthropist and a versatile visionary.

The astounding growth of RVS Educational Trust has brought under its fold a plethora of educational institutions ranging from schools to higher educational institutions. The Trust runs Matriculation Higher Secondary School, Arts and Science College, Management Studies and Research Institute, Para medical institute comprising of Nursing, Physiotherapy, Pharmacy & Ayurveda College at Sulur campus, a suburb of Coimbatore cosmopolitan city. There is an archipelago of educational institutions comprising of a Dental College, Engineering and Polytechnic College, Homeopathic Medical College and Hospital, Siddha Medical College and Hospital, Teacher Training Institute, and College of Education at Kannampalayam campus situated a few kilometers from Sulur.

Yashaswi Academy for Skills
www.yashaswigroup.in

Yashaswi Academy for Skills is a part of Yashaswi Education Society, for more than 2 decades, they have created professionals ready to take on the corporate world. They have honed their skills, enhanced their knowledge and

given them exposure to today's business scenario so that when they step into the corporate world, they are equipped to leap ahead from the word 'go'.

Acknowledging the critical importance of skill development of the working class Maharashtra Government Proposed the skill development center in Ambad,Dist Jalna where currently 20 courses are running. In Skill development sector, we are partners with National Skill Development Centre. They are also collaborated with MSBTE for Diploma in Drug Science, Food Science, Logistic & Hospitality Management last year about 400 students are taking education under this scheme.

The Yashawantrao Chavan Maharashtra Open University & Yashaswi Institute of Technology jointly developed an innovative concept namely "Learn & Earn" which is approved by Government of Maharashtra vide the notification GR. No. TED/2010/ (144/10) Dated 26th July 2010. LEARN AND EARN SCHEME" Under this scheme, YIT selects SSC, HSC passed/ failed, MCVC passed/ failed ITI students through well designed process selection with the involvement of industry experts. Student will undergo for the classroom training, workshop and practical according to the shift duty and weekly off. Selected students are deputed to the concerned organization(s) for On the Job Training.

Newtek India Pvt Ltd. (NIPL)

www.newtekindia.in

NIPL is an organization, which has been providing Training services in terms of enhancing the employability and On the Job Training (OJT) to the students of Indian Universities since 2007.

Consistant interaction with the industry has enabled NIPL team to visualize the quality and caliber of human resource required by the industries striving to excel in globally competitive environment. NIPL aims to design, implement and establish professional training programs which are integrated with the expectations of the industry.

The institutional set-ups of NIPL have state-of-the-art infrastructure facilities, such as Wi-Fi campus, classrooms equipped with LCD projectors and PC/Laptop facility on all seats, computer lab, library and conference room for corporate training and workshops, seminars, etc.

NIPL signed an MOU with Shriram Institute-Technology Business Incubator (SRI-TBI), which has been setup in the premises of Shriram Institute for Industrial Research, Delhi under the sponsorship of Department of science & technology (DST), Government of India. The NIPL in association with SRI-TBI provides training services in the fields of plastics, rubbers, specialty chemicals and waste management.

NIPL is also registered as a Project Implementation Agency for DDU-GKY erstwhile Aajeevika Skills under Ministry of Rural Development, India.

National Educational Society (NES)
www.mgpgc.in/Academics.aspx

In the 20th Century, the idea for a planned high school level school conceived in mind of few intellectuals of the city and National Educational Society (NES) was founded. The purpose of the institution was to impart quality education to students of every society. India is still low in literacy, infant mortality rate, life expectancy, population density, people living below poverty line and other such human development indices compared to national and state averages. The lack of access to quality education for the students living in this socio-economically marginalized region restricted them to excel in spite of their talents. Access to science education was even a greater challenge. With this background, NES started a degree college in the year 1969 with the clear aim of maintaining the institution for quality education.

Gradually school progressed with efforts and endeavour of its founders and they gained experienced over a period of time. At the time of inception it was expected that the institution will have a distinctive role as a excellent institution catering to the need of students, who belong to marginalized area, and the students who were not able to learn new subjects because of their socio economic limitations. The institutions, from the very beginning, paid special attention to women students and seats were reserved for women, to create interest of girls in the science subjects.

Need of technical education focusing on skill development and employability has been demand of the time. Employability skills are the basic skills needed to get, keep, and do a job well. The difference between the skills an applicant has and the skills required for the job is referred to as the skills-gap. NES provide skill development training to fill the skills - gap and lead towards self reliant and self employed community.

AITS
www.aitsindia.org

AITS are primarily engaged in the areas of skill development and training, development of models and teaching methodologies to strengthen the non formal education sector, services dissemination across semi urban and rural, all of which are aimed at achieving an objective of addressing the skill gaps pertinent to the emerging needs of a rapidly growing economy.

They established in 2009, have trained thousands of students in various

vocational training programmers of state, central government and in hardware, software and IT. Active across 6 states with more than 80 successful associated learning centre's, we run various state and central governments projects. Our primary objective is to develop, execute, and maintain projects with operational excellence. AITS is committed towards promoting, imparting and facilitating sustainable quality education directly and through its associate network capable of imparting training.

They are serving various central and state govt. agencies / departments/ Ministries for execution of Skill Development and vocational training projects to help unemployed youth create livelihood for themselves and families. AITS are project implementation agency (PIA) with ministry of Rural Development. They have conducted various short term courses, job oriented and entrepreneurship including. They have also performed training with KVIC and HARDICON under Pradhan Mantri Employment Generation Program (PMEGP). We had also conducted MSME, Powergrid, CIPET and HIMCON programs.

L to R : Mr.Vinod Simon Chairman RSDC, Mr.Rajiv Pratap Rudy Minister Skill Development , Mr.Surendra Gupta Past Chairman AIRIA, Mr.Raghupati Singhania Chairman ATMA, Dr. Mukhopadhaya Chairman IRI, Shri Mohinder Gupta President AIRIA

RUBBER BOARD TRAINING PROGRAM

Rubber Training Institute

The Rubber Board through its R & D activities has been developing expertise on all aspects of rubber cultivation, processing and product manufacture since its inception. The consistent efforts made to improve on-farm and shop-floor technology, besides supporting the rubber sector have provided the Board with confidence to train the personnel involved in the up and down stream activities of the industry on scientific techniques to achieve cost and quality competitiveness. The new technology is delivered to the clientele through the Rubber Training Institute.

The Rubber Training Institute is located close to the Rubber Research Institute of India at Puthuppally, 8 km to east of Kottayam in Kerala State on the South Western coast of India. The nearest airport is the Cochin International Airport, 80 km to the north and railway station is at Kottayam. The road approach is by the National Highway 220 Kottayam Kumali Road (Please see the road map provided).

The Rubber Training Institute has state of the art facilities including air- conditioned training halls, training laboratories, well-stocked library, museum, computer centre, auditorium, neatly furnished hostel with ordinary and air-conditioned rooms, canteen, recreational facilities, physical fitness centre all set in a beautiful building (3710 m^2 floor area) with a landscaped garden. The training institute also utilizes the excellent laboratory facilities of the Rubber Research Institute of India. The campus is nestled in a quiet valley away from traffic and noise, an ideal location for learning.

Application and other information

Application
In the prescribed format, on plain paper or by e-mail

Eligibility
Minimum educational qualification for admission to any course is S.S.L.C. The medium of instruction in general is English. Hindi and Malayalam are also used.

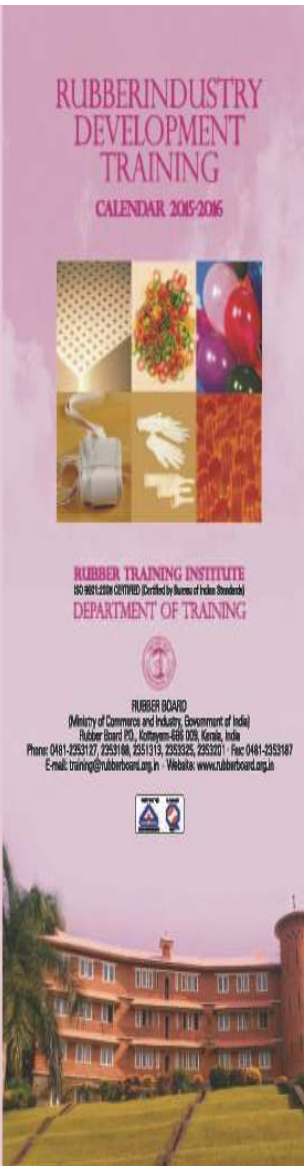
Training Fee
Includes tuition fee, course materials, local transportation and working lunch. SC/ST candidates are eligible for 50% fee concession on production of certificate. 14% Service Tax is chargeable on training fees.

Payments
Fee can be remitted at the counter or by MO/DD drawn in favour of Director (Training), Rubber Board payable at Kottayam or by direct remittance to our account IFSC code CBIN 0284156 A/c No. 1450300184. Please send copy of remittance receipt with the application.

Hostel
Limited accommodation is available at RTI hostel on payment basis. Please check with us for availability and rates.

Confirmation
The date given for each programme is tentative and is finalised 30 days ahead of each programme. Please get confirmation prior to payment of registration fees.

Contact Persons
Director (Training)/Dy. Director (RIDT)/SMS(RT)
Rubber Training Institute, Rubber Board P.O
Kottayam - 686 009, Kerala, India.
Phone: 0481-2353325, 2353201
2351313, 2353127, 2353168
Fax: 0481-2353187
e-mail: training@rubberboard.org.in
Website: www.rubberboard.org.in



RUBBER INDUSTRY DEVELOPMENT TRAINING 2015-16

No.	CODE	TITLE (Topics, Beneficiary Group and Objectives)	DAYS	SCHEDULE	FEES*
		RUBBER PROCESSING AND QUALITY IMPROVEMENT PROGRAMMES			
1.	RP 01	**SHORT TERM TRAINING ON RUBBER PROCESSING AND QUALITY CONTROL** Composition of natural rubber latex, collection and preservation, preparation of sheet rubber, grading, concentration of preserved latex, solid block rubber, EBC, PLC, testing of block rubber and cenex, effluent treatment and pollution control *Sponsored persons from rubber plantations, public sector institutions, rubber processing units/interested persons *To impart scientific knowledge/skills for processing of the crop into various marketable forms and quality control.	5	11-15 January 2016	2000/-
2.	RP 02	**TRAINING ON SHEET RUBBER PROCESSING AND GRADING** Latex collection, processing into sheet rubber, smoke houses, grading as per Green Book standard, etc. *Rubber dealers/rubber growers/processors *To impart scientific knowledge in sheet rubber processing and grading.	2	21-22 April 2015 18-19 May 2015 3-4 September 2015 23-24 November 2015 7-8 January 2016 22-23 February 2016	800/-
3.	RP 03	**SPECIALIZED TRAINING ON PROCESSING OF BLOCK RUBBER/CENEX** Collection of latex and field coagulum materials,production of block rubber, testing and quality control as per BIS standards, machinery, production, planning and control/production of cenex and its quality control *Managers/supervisors deputed by processing factories *To impart training on processing of block rubber and speciality rubbers/cenex	2-5	Need Based	1000/- per day
4.	RP 04	**TRAINING ON TOTAL QUALITY MANAGEMENT AND ISO 9000 QUALITY SYSTEM** Quality concepts and systems, documentation for quality systems, internal audit, statistical quality control, case study etc. *Managers/quality control officers deputed by processing factories *To impart training on management of quality for ensuring consistency	3	Need Based	1200/-
5.	RP 05	**TRAINING ON EFFLUENT TREATMENT & POLLUTION CONTROL** Effluent treatment, control measures, testing, effluents standards & statutory requirements etc.* Rubber processors *To impart awareness on pollution control and effluent treatment.	3	Need Based	1200/-
6.	RP 06	**TRAINING ON RUBBER WOOD PROCESSING AND QUALITY CONTROL** Rubber wood processing technology, quality control * Entrepreneurs / technical personnel from wood processing units * To impart scientific knowledge on rubber wood processing	1-5	Need Based	1000/- per day
		RUBBER INDUSTRIAL DEVELOPMENT PROGRAMMES			
7.	RM 01	**SHORT TERM TRAINING ON LATEX GOODS MANUFACTURE** Latex collection, preservation, concentration, compounding ingredients, latex compounding, product design, production of rubber band/gloves, foam rubber/adhesives/balloons/coirfoam carpet/backing, testing and quality control etc. * Entrepreneurs / technical personnel from latex based units * Provide scientific knowledge/skills in latex products manufacture	5	27 April - 1 May 2015 27-31 July 2015 14-18 September 2015 (NE) 12-16 October 2015 1-5 February 2016	2000/-
8.	RM 02	**SHORT TERM TRAINING ON DRY RUBBER GOODS MANUFACTURE** Natural/synthetic rubbers, compounding ingredients principles of compounding, moulded/extruded/calendared goods, process control tests, vulcanisetes testing, production, planning&controletc.* Entrepreneurs/persons from rubber based industries *To provide scientific knowledge/skills in the manufacture of rubber products using natural and synthetic rubbers and testing of rubber products.	8	8-15 May 2015 3-12 August 2015 28 October -8 November 2015 8-17 February 2016	3200/-
9.	RM 03	**ADVANCED TRAINING ON RUBBER PRODUCTS DEVELOPMENT AND MANUFACTURE** Raw materialsfor its quality control and general &special purpose synthetic rubbers, compounding ingredients, compounding and compound design, polymer blends, mfg. process of products, testing & quality control, products development, storage of rubber products etc.* Persons from rubber industry and R&D institutions / defence laboratories to impart training on advanced techniques of rubber products manufacture and product development.	5	Need Based	2500/-
10.	RM 04	**SPECIALIZED TRAINING ON TESTING AND QUALITY CONTROL OF RUBBER AND RUBBER PRODUCTS** Testing of raw materials, process control tests, testing of vulcanisates/products etc. * Persons from rubber industry/R&D institutions/ defence laboratories *To impart knowledge on testing of rubbers and rubber products.	5	20-24 July 2015 18-22 January 2016	1000/- per day
11.	RM 05	**SPECIALIZED TRAINING ON LATEX AND DRY RUBBER PRODUCTS** Surgical/examination/industrial gloves, condoms, coir foam, balloons, latex thread, automobile rubber components, microcellular/kattai sheets, tread rubber, dicomata etc. * Persons from rubber based units *To impart training on individual products including testing and quality control and recent developments.	4	Need based	1000/- per day
12.	RM 06	**TRAINING ON ENTREPRENEUR DEVELOPMENT IN RUBBER INDUSTRY** Outline on rubber industry-processing, latex and dry rubber based industries, management skills *Entrepreneurs/interested persons *To develop entrepreneurs in rubber based industry.	4	7-11 September 2015 (NE)	800/- per day
		MARKET AND EXPORT DEVELOPMENT PROGRAMMES			
13.	MD 01	**SHORT TERM TRAINING ON MARKETING AND EXPORT MANAGEMENT** Marketing of Natural Rubber-Basics of marketing, marketing services, strategic marketing and export marketing* Members of Rubber Marketing Co-operative Societies/ industrialists/rubber dealers *To impart knowledge on marketing of rubber	4	22-25 June 2015 1-4 December 2015	1600/-
14.	MD 02	**TRAINING ON EXPORT MANAGEMENT** Export of Natural Rubber-export market scenario, exim policies, export promotion measures, procedures and documentation, quality concerns etc.*Rubber dealers/exporters/ interested persons *To impart general awareness on export of rubber and its promotion.	1	20 January 2016	1000/-
		OUT STATION TRAINING PROGRAMMES			
15.	DT 03	**ORIENTATION TRAINING ON RUBBER BASED INDUSTRY** Scope of rubber based industry*Farmers/unemployed youth *To promote rubber based industry	1	Need -based	Nil
16.	DT 04	**TRAINING ON QUALITY CONTROL OF DIFFERENT MARKETABLE FORMS OF NR & OTHER TOPICS** Quality control of Natural Rubber and other needy topics*Manufacturers/consumers of rubber products *To impart quality awareness on rubber/rubber products, basics of rubber technology, update technical knowledge on products manufacture and related areas.	1-2	Need Based	Mutually agreed rates
		SASTRADARSHAN			
17.	VT 01	**SASTRADARSHAN** Provide an opportunity to visit RTI and RRII to create scientific awareness in rubber/rubber wood processing, products manufacture, quality control of rubbers/chemicals/products etc. *Members of co-operative societies/interested groups/marketing personnel/students from Universities Colleges/voluntary organizations/rubber industry etc.	1	On all Thursdays	Sponsored

* 14% Service Tax is chargeable on training fees. Board and lodging (extra) Rs. 250/- per day. All training programmes are arranged on request, subject to conditions * Non-residential fees.

Indian Rubber Manufacturers Research Association

***Indian Rubber Manufacturers Research Association**, popularly known, as IRMRA is Premier Research and Development organization established in 1959 to serve the Rubber & allied industries. IRMRA affiliated to the Ministry of Commerce & Industry, DIPP, Govt. of India, has modern state of art scientific and analytical instruments and fully equipped with facilities for design & development, product development , validation and testing of rubbers and allied materials. Govt. of India has funded to create this state of art R&D center to support Rubber Industries & end users to improve the quality of rubber products.*

Training & Consultancy

IRMRA Training Calender 2015

Training Courses on Laboratory Management System (F.Y. 14-15)

Indian Rubber Manufacturers Research Association, popularly known, as IRMRA is Premier Research and Development organization established in 1959 to serve the Rubber & allied industries. IRMRA affiliated to the Ministry of Commerce & Industry, DIPP, Govt. of India, has modern state of art scientific and analytical instruments and fully equipped with facilities for design & development, product development, validation and testing of rubbers and allied materials. Govt. of India has funded to create this state of art R&D center to support Rubber Industries & end users to improve the quality of rubber products.

IRMRA Undertakes

- Research & Development (product & process development)
- Sponsored Research
- Testing and certifications (Tyre & Non-Tyre testing)
- Rubber Engineering and Finite Element Analysis
- Quality Audit & GMP services
- Training & Consultancy services on Rubber Technology & LMS

IRMRA has following Quality accreditations / recognitions

- ISO 17025:2005: NABL Accredited
- ISO: 9001:2008 certified
- UL (Underwriters Laboratory, USA) recognized
- DGMS Accredited
- BIS Recognized for various Tyre & Non- Tyre Testing
- DGQA, DSIR, CEMILAC Recognized

Technical Training courses

These courses are designed to impart knowledge and skill set for the benefit of rubber and allied industries and students / academic professionals through :

- The blend of theoretical classes along with practical demonstrations
- Well qualified and experienced faculties from IRMRA, Industry and Academic institutions
- Exposure of modern instruments and state of art facilities
- Interactive sessions / discussions with experts & faculties

Lab Management System courses

These courses are offered for the testing and calibration laboratory personnel with the objective of fulfilling the requirements of ISO 17025 which are conducted:

- With lectures, tutorials, exercises & discussions
- By well qualified & experienced faculties from IRMRA & outside Experts

R & D and Testing Centre

Tyre Research & Testing Centre

For Details please contact
Mr. K. Rajkumar, (Director)
Mr. Niteesh Shukla, (Course Coordinator)
Plot No. 254/1B, Road No.16-V
Wagle Industrial Estate, Thane - 400 604, Maharashtra
Tel. No.: +91 22 25803753; 25811348; 25834650/1/2/4; Extn. 212/213
Fax : +91 22 25823910
Mobile : 9820777586 / 8655095345
E-mail: irmratrg2012@gmail.com,trg@irmra.org, info@irmra.org, rk@irmra.org

Venue for Training
IRMRA
Plot No. B-88, Road No. 24, Wagle Industrial Estate,
Thane - 400 604, Maharashtra

IRMRA TRAINING CALENDAR	2015															
Sr. No.	TITLE	JAN.	FEB.	MAR.	APR.	MAY.	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	COURSE FEE ** (in Rs.)	
(A)	TITLE TERM TECHNICAL TRAINING COURSES ON RUBBER TECHNOLOGY													Non-Res.	Res.
1.	Quality Assurance through Inspection and Testing of Automotive Rubber Products				15-17							18-20		14000/-	17000/-
2.	Compound & Testing of Rubber Products		11-13						12-14				16-18	14000/-	17000/-
3.	Reverse Engineering and life Prediction of Rubber Products	14-16												14000/-	17000/-
4.	Processing, Physical and Chemical Testing of Rubber Products						10-12							14000/-	17000/-
5.	Workshop on Tyre Technology and Testing of Tyres							22-23						12500/-	14000/-
6.	Compound Design and Testing of Molded Rubber Products										7-9			14000/-	17000/-
(B)	TRAINING COURSES ON LAB MANAGEMENT SYSTEM AND OTHERS														
1.	Measurement Uncertainty-Chemical & Mechanical												9-11	9000/-	10500/-
2.	Assuring quality of test and calibration results									3-4				7500/-	9000/-
3.	Laboratory Management System as per ISO 17025:2005 and Internal Audit	27-30					23-26							12500/-	17000/-

For Registration / Detail please Contact:

IRMRA Director
1. IRMRA Director
2. Mr. Niteesh Shukla, Asst. Director & Course Coordinator
Mob :- 9820777586 / 8655095345
Te :- +91-22-25811348; 25834650/1
Fax:- +91-22-25823910
E-mail:trg@irmra.org;info@irmra.org;ns@irmra.org

- Course fee exclusive of Service Tax
- Discount 5% for 2 candidates & 10% for 3 or more candidates from the same organization on basic [non res] fee
- The accommodation is arranged on Twin Sharing basis
- Payment to be made in advance by DD/Cheque in the favor of IRMRA, Payable at Thane
- We also offer customized Training programs for your employees at your end

Please Note: Bank Details:SBI (Wagle-Thane-400604) Current Account No. 10928676072 NEFT/IFSE:SBIN0001053; SWIFT Code:SBININBB541; pan no. AAAAT7089F; Service tax No.:AAAAT7089F St001" Incase of RTGS payment or direct cheque deposit please provide the payment advise and the amount to be paid on account of IRMRA ". Also provide your PAN card & Service tax details.

TECHNICAL COURSE RUN BY IRMRA

Sl.No	Title of the course
1	Quality Assurance through Inspection and Testing of Automotive Rubber Products
2	Compounding and Testing of Rubber products
3	Reverse Engineering and Life Prediction of Rubber Products
4	Processing, Physical and Chemical Testing of Rubber Products
5	Workshop on Tyre Technology and Testing of tires
6	Workshop on Tyre Technology and Testing of tires
7	Compound Design and Testing of Moulded Rubber Products

Indian Rubber Institute

The Indian Rubber Institute is a professional body of the Indian Rubber Industry. It is registered under the Indian Societies Act, 1961 and it is the successor in India of THE PLASTICS & RUBBER INSTITUTE (PRI), London, U. K. which merged with Institute of Materials, U.K., which has again merged with The Institute of Mining & Metallurgy (IoM), U K. IT IS A NON PROFITABLE ORGANISATION ENGAGED IN DEVELOPMENT OF RUBBER TECHNOLOGY EDUCATION.

Under the auspices of the INSTITUTE OF RUBBER INDUSTRY, U.K. -- an international body founded in 1921 – an Indian Advisory Committee of the said Institute was set up for the first time in India in 1946 with Headquarters at Kolkata and the inaugural ceremony was held at the University College of Science, Kolkata under the Chairmanship of Mr. F Brierley.

During 1947 the said Indian Advisory Committee was reconstituted into a full fledged Indian Section of the Institute of Rubber Industry (IRI), U.K. The Indian Section of IRI was fortunate to have the blessings of the most distinguished scientists, technologists and industrialists like Sir J. C. Bose, Sir RamaswamyMudaliar and others. Late Dr. D. Banerjee acted as Hony. Secretary for a number of years.

Educational programme were initiated during that period as per the rules of IRI, U.K. and Licentiate (LIRI) Examination of the IRI, U.K. was conducted in Kolkata, Subsequently Branches were constituted at Mumbai, Delhi and Chennai and educational programmes were conducted at all the Branches.

During 1970s, the Institution of Rubber Industry, U.K. and the Plastics Institute, U.K. merged and a new Institute was formed – renamed as THE PLASTICS AND RUBBER INSTITUTE (PRI), U.K. with membership both from the Plastic Industry and the Rubber Industry in Australia, Belgium, Canada, Germany, India, Indonesia, Malayasia, Pakistan, Singapore, Sri-lanka, Zambia and other countries with a membership of more than 15000.

At this stage the Indian Section of IRI, U.K. was also changed to PRI Indian

Section (Rubber) and continued its activities under PRI, U.K., in all its Branches which continued to increase. Through examination as well as through up-gradation of membership at least 2500 Chartered Rubber Technologists have been created by the Institute designated as

1. **Fellows (FPRI)**
2. **Members (MPRI)**
3. **Associates (APRI)**
4. **Associate Members (AMPRI)**
5. **Graduates (GRADPRI)**
6. **Licentiate (LPRI) and**
7. **Diploma (DPRI)**

Such accredited members of the Institute have constituted the core team of technical manpower engaged by the Indian Rubber Industry in various disciplines in both tyre and non-tyre sectors. **PRI/IRI has completed 67 years of service and quite a few of such members have retired** while there are many holding key positions in top technical management functions covering raw materials, corporate planning, management functions covering raw materials, production technology, process, engineering, R&D, product design, performance audit – both domestic and international –in the Industry.

The educational programme has always been the prime objective of the PRI, Indian Section (Rubber) to give specialized training to its members attached to the Industry having not had adequate opportunity to attend graduate and post graduate course at Universities and IITs. This special facility has been taken advantage of by a large section of members throughout the country and this has been the principal contribution of PRI, Indian Section (Rubber) as well as IRI towards technological and scientific development of the Indian Rubber Industry covering both tyre and non tyresectors.Sofar more than 2500 Rubber Technologies were trained who retired or still are working in Rubber & Allied industries.

During 1987, the PRI, U.K. underwent further restructuring and by 1992 PRI, U. K. was liquidated and merged with THE INSTITUTE OF MATERIALS, U. K., of which Her Majesty the Queen is the Chief Patron. THE INSTITUTE OF MATERIALS has now become THE INSTITUTE OF MATERIALS, MINERALS and MINING on merger with THE INSTITUTE OF MINING & METALLURGY (IoM).

❖ EDUCATIONAL PROGRAMME

For development of technical manpower, IRI also proposes to emphasise on the spreading of Education in rubber and allied subjects and not solely focusing on Diploma Courses only. Towards this goal of spreading education we may consider organizing, in association with AIRIA, ATMA, IRMRA, RUBBER BOARD and other organizations as associates and carryout workshops, publication of monogram on current lively and latest topics relevant to the Rubber Industry. This will help IRI become an Institute of technocrats irrespective of their background and specialization.

Indian Rubber Industry is poised to have a robust growth in view of buoyant economy and resultant economic development. It is almost certain that in the coming years India and other South-East Asian countries will become preferred locations for manufacture of rubber goods for the whole world. For such a huge expected growth, there is immense potential and paramount need for training and developing technical manpower at various levels in the industry in addition to the educational program me being conducted by various Universities and Institutes.

❖ TRAINING, CRASH COURSE AND OTHER TAILOR MADE SHORT TERM COURSES

Regular weekly training classes on Rubber Science & Technology for DIRI/PGD-IRI students are conducted at seven branches in association with University/Institutes & Industry. IRI also conducts annual **CRASHCOURSES** for DIRI/PGDIRI students and short term modular courses tailor made to suit the concerned Industry or end users of rubber product. Modular courses are also conducted at the Industry's premises to help them get improved performance and make them aware of trouble shooting which will help in their productivity, particularly for their maintenance, production and purchase executives courses are likely to be conducted at the Eighth Branch shortly.

❖ MOU WITH DIFFERENT NATIONAL UNIVERSITIES AND INSTITUTES

1. INDIAN INSTITUTE OF TECHNOLOGY, KHARAGPUR

On 28th January, 2009 fresh MOU was signed with Rubber Technology Centre, Indian Institute of Technology, Kharagpur for continuing conducting Examinations of DIRI and PGD IRI

2. MOHAN LAL SUKHADIA UNIVERSITY (MLSU), UDAIPUR

Indian Rubber Institute is working as an interface between industry and academia. An M.Sc. course on Polymer Science & Rubber Technology is

jointly being run by IRI, Rajasthan Branch, HASETRI and Mohan LalSukhadia University of Udaipur.

3. RUBBER BOARD (GOVERNMENT OF INDIA)

On 29th July, 20010 MOU with Rubber Board, a statutory body constituted by the Government of India under Rubber Act 1947 (Act XXIV of 1947), Kottayam (Kerala) for conduct of collaborative training programmes in human resource development for the Rubber Industry and we have been jointly organizing such programme at regular intervals.

4. VIDYA BHAWAN POLYTECHNIC, UDAIPUR

VidyaBhawan Polytechnic Udaipur is running a Post Graduate Diploma Course in Rubber Technology for Diploma Engineers, jointly with Indian Rubber Institute, Rajasthan Branch, JKTyre& HASETRI.

5. CALCUTTA UNIVERSITY

During May 2013 MOU with Department of Plastics & Rubber Technology, Calcutta University has been signed and Calcutta University will provide space at their premises to Indian Rubber Institute to establish a testing laboratory and organizing training Programmes. Fresh MoU was signed on 28th March, 2014 between the Registrar, Calcutta University and the Chairman IRI in the presence of Vice Chancellor, Pro Vice

Chancellor for Academic Affairs.

❖ SETTING OF TESTING AND TRAINING CENTRE

INDIAN RUBBER INSTITUTE through its Branches can also play a role in helping Small Scale Rubber Manufacturing units in both R & D and testing of products with the help and cooperation from AIRIA, Rubber Board and IRMRA which will indeed help proper growth of the Small Scale Rubber Industry throughout the country.

To serve particularly the small scale rubber industry all over the country IRI seeks support from Rubber Board, IRMRA, AIRIA, Central and State Governments for setting up Centre of Training as well as R & D Centre with facility for testing of products.

Being a national Institute and having put in over 67 years of service to the cause of the Industry's development, we have reason to believe that our efforts will be supported in appropriate manner, so that our goals and objectives are achieved.

The whole process is of mutual benefit to both the Industry and IRI and it is our

firm hope that the linkage will be stronger in the years to come between IRI, academic institutions, Central and State Governments and the Industry.

❖ DISTANCE LEARNING COURSES OF UNIVERSITY OF AKRON, USA

Efforts are on in association with IRMRA, AIRIA, ATMA, RUBBER OARD AND CAPEXIL to seek extension of Distance Learning Programme developed by University of Akron.

❖ THE DIPLOMA COURSE AND EXAMINATION

Both the Diploma and Post Graduate Diploma Course is a One Year Part-Time course conducted by the Indian Rubber Institute presently at six Centres. Candidates who successfully complete the requirements of the Course are awarded the Diploma (DIRI) and Post Graduate Diploma award of the Indian Rubber Institute (PGD-IRI) and they are recognized as qualified to practice their profession in the Indian Rubber Industry.

The syllabus of the Course has been approved by the Automobile Tyre Manufacturer's Association (ATMA) and All India Rubber Industries Association (AIRIA).

Classes start from AUGUST and continue till APRIL/MAY.

The DIRI and PGD-IRI Examination is conducted every year during June/July by Rubber Technology Centre, Indian Institute of Technology, Kharagpur at seven different Centre at Chennai, Delhi, Mysore (Karnataka), Kolkata, Mumbai, Kankroli (Rajasthan) and Cochin(Kerala).

There is continuous assessment of the candidate's progress in theory and practical by the Branch Faculty and they have to approve the candidate's suitability for appearing at DIRI and PGD-IRI Examination.

The papers that the candidates have to appear in are as under:

I Polymer Science

II Rubber Processing and Engineering

III Rubber Materials

IV Rubber Product Manufacturing and their Evaluation

The depth and width of knowledge to be acquired by students through this course has been attempted to be covered through two aspect viz. understanding part and familiarization part in each paper.

The course content is designed to have good coverage of the aspect of width of knowledge and number of lecture classes to be taken in each section of a paper is outlined in the parenthesis.

Pass marks for any paper is 50 MIN individually.

Candidates must clear all the papers at a time.

A candidate not successful in any one paper may clear up the back paper in subsequent appearance/s.

A pass with distinction is obtained if the candidate obtains a pass mark average of 75% or over.

The Rules of examination are provided to the registered students.

❖ CONTROLLER OF EXAMINATIONS

DIRI & PGD-IRI Examination is conducted by RUBBER TECHNOLOGY CENTRE, INDIAN INSTITUTE OF TECHNOLOGY (IIT), KHARAGPUR, as the Controller of Examinations.

❖ ELIGIBILITY

The minimum qualification is a B.Sc. degree, preferably with Physics and Chemistry or Degree in Engineering, engaged in Rubber and Allied Industry for PGD-IRI. Diploma holders and 12 class pass with Science with experience are considered. For DIRI

Candidates not possessing the eligibility requirements, but working in Rubber or Allied Industry are allowed to attend the Course but are not entitled to appear at Final Examination. However they will be issued a Certificate by the respective Branch of having attended the Course. This helps entrepreneurs.

Candidates must pay all the required fees at the time of Admission in advance except Examination Fee.

Students attending the Course will have to appear at Final Screening Test before appearing at Final Examination and those who are successful at the Test will be allowed to appear at the Final Examination.

Examination Fee, as prescribed, has to be paid in advance by the candidate passing the Final Screening Test.

Students not allowed to appear at Final Examination, however, can continue to attend the Course conducted till the Examination.

Venue and timings of classes are notified by the respective Branch to the students concerned. Venue of classes can be shifted after due notification to the students.

INDO GERMAN TOOL ROOM
AURANGABAD

PROFILE

PROFILE

Indo German Tool Room (IGTR) Aurangabad (A Govt. of India Society, Under Ministry of MSME) an ISO 9001:2008, ISO 29990:2010, ISO 14001:2004, BS OHSAS 18001:2007, ISO/IEC 17025:2005 CERTIFIED Training & Production Centre established in the year 1990 is the symbol of Indo-German co-operation aimed at promoting purposeful technical education for the youth in India. The organization was actively supported with generous assistance form the GTZ, development agency of Govt. of Germany, the Government of India and the State Government of Maharashtra. The organization implements its programme of technical training through its Training Centre located at Aurangabad and Extension Centres at Pune, Nagpur & Mumbai.

IGTR has ultramodern, state-of-the-art Tool Room facilities under single roof. It is a Dream Tool Room for any Tool Maker. The wide spectrum of sophisticated machines include latest & advance CNC Lathe, Milling, EDM & Wire-Cut machines, which can cater to various requirements of the customers.

IGTR strongly believes in TQM Philosophy. This belief is evident in the procedures adopted for ensuring quality before and after manufacture. High precision equipment like CNC Co-ordinate Measuring Machine, Electronic Height Master, Profile Projector and Tool Maker's Microscope ensure thorough checking of the components. A full-fledged standards room and NABL Accredited calibration Lab Offers Precision measuring/ Inspection of job and Calibration of Measuring instrument services as per standards requirements. In addition, trials of the tools are undertaken on the Mechanical Press and Injection Moulding Machines.

ACTIVITIES

Equipped with state-of-the-art machinery & training facilities, the various activities are :

TOOL DESIGN & MANUFACTURING | **TOOL TRYOUT & PART PRODUCTION**

TRAINING | **QUALITY ASSURANCE** | **CAD / CAM**

TRAINING CENTRE

Completely equipped with latest CNC & Conventional machines Training Center offers scientifically designed Long, Medium & Short Term Course in the field of Tool & Die Technology. Scientifically designed curriculum ensure optimum blending of theory and practice using latest pedagogical techniques and teaching Aids by trainers. Training aims at.

- Bridging the gap of trained for 21st Century.
- Giving the vocational direction to youth for development of technical skill.
- Gainful employment in high-tech area.
- Entrepreneurial skill with techno-commercial knowledge.
- Professional ethics, work culture & personality development.
- Awareness towards the Nation, Society & Environment.

TRAINING PROGRAMMES

Wide spectrum career oriented courses being conducted are

LONG TERM COURSES	Advance Diploma in Tool & Die Making	ADTDM	SSC Pass Outs
	Diploma in Mechatronics	DMT	
	Certificate Course in Machinist (Tool Room)	CCMTR	
	Post Graduate Diploma in Tool Design & CAD / CAM	PGDTD & CC	B.E. Graduates
	Post Diploma in Tool Design & CAD / CAM	PDTD & CC	BE / DME Graduates
	Post Diploma in Tool & Die Manufacturing	PDTDM	
	Post Diploma in Computer Aided Engineering (Mfg.)	PDCAE	
	Post Diploma in Mechatronics	PDM	
	Advance Certificate Course in Tool Design & CAD / CAM	ADCTD & CC	ITI Pass Outs
	Advance Certificate Course in Tool & Die Manufacturing	ADCTDM	
	Advance Certificate Course in CNC Machining	ADCCM	
	Advance Certificate Course in Machine Maintenance	ADCMM	
	Certificate Course in CNC Turning & Milling	CCCTM	SSC Pass Outs/Appeared
	Certificate Course in Tool & Die Making	CCTDM	
	Certificate Course in Machine Tool Operations	CCMTO	
	Certificate Course in Machine Maintenance	CCMM	
MEDIUM TERM COURSES	Certificate Course in Computer Hardware Maint.& Networking	CCCHMN	SSC Pass Outs
	Certificate Course in Advance Networking	CCAN	
	Certificate Course in CNC Machine Operations - Lathe	CCCMO(L)	SSC Pass/Appeared
	Certificate Course in CNC Machine Operations - Milling	CCCMO(M)	
	Certificate Course in CAD & Quality Assurance	CCCQA	12th Pass outs/BSc Graduates/ ITI
	Certificate Course in CNC Operations (Lathe/Milling/VMC/EDM)	CCCO	
	Master Certificate Course in Computer Aided Tool Engineering	MCCATE	BE / DME / ITI
	Master Certificate Course in CAD/CAM	MCCC	
	Master Certificate Course in Tool Design	MCCTD	
	Master Certificate Course in Mechatronics	MCCM	
	Master Certificate Course in CNC Technology	MCCCT	
	Certificate Course in Computer Aided Tool Engineering	CCCATE	
	Certificate Course in Mechatronics	CCM	
	Certificate Course in VLSI & Embedded System Design	CCVESD	
	Certificate Course in CAD/CAM	CCCC	
	Certificate Course in Tool Design	CCTD	
	Certificate Course in Tool Design & CAD/CAM	CCTDCC	

SHORT TERM COURSES — Skill Development Programmes in the field of CAD/CAM/CAE, Automation, General Engineering for Diploma/Engineering Graduates, Professionals, Professionals of Micro, Small & Medium Enterprises

INTERNATIONAL PROGRAMMES — Specific Cluster Designed Training Programmes of 12 Weeks to 1 Year duration in the area of Tool Design, CAD/CAM, CNC Machining, LCA, Trainer's Training as per international customers requirement.

ENTREPRENEURSHIP SKILL DEVELOPMENT PROGRAMMES SPONSORED BY MINISTRY OF MSME (Govt. of India)

ISO 9001:2008

ISO 29990:2010

ISO 14001:2004

BS OHSAS 18001:2007

&

ISO/IEC 17025:2005

CERTIFIED TOOL ROOM & TRAINING CENTRE

MSME TOOL ROOM
INDO GERMAN TOOL ROOM, AURANGABAD

Head Office
P-31, MIDC, Chikalthana Industrial Area, **AURANGABAD.** 431 006 (M.S.)
Phone : (0240) 2486832, 2482593, 2470541, 2480578
Fax : (0240) 2484028 Gram : "IGTOOLS"
E-mail : gm@igtr-aur.org
Web Site : http/www.igtr-aur.org ,www.igtr-aur.gov.in

EXTENSION CENTRES

MUMBAI

INDO GERMAN TOOL ROOM, AURANGABAD
EXTENSION CENTRE, MUMBAI
MSME Development Institute,
Sabi Naka, Kurla - Andheri Road, Mumbai 400 072.
Phone : 0091 - (022) 28573020
Fax No. 0091 - (022) 28573024
Email : training_mum@igtr-aur.org

PUNE

INDO GERMAN TOOL ROOM, AURANGABAD
EXTENSION CENTRE,PUNE
Near PMT Workshop,Shakarshet Road.
Swargate, Pune - 411 037
Phone : 0091 - (020) 24440861
Fax No. : 0091 - (020) 24440862
E-mail : igtr_pune@yahoo.co.in

NAGPUR

INDO GERMAN TOOL ROOM, AURANGABAD
EXTENSION CENTRE, NAGPUR
P-142, MIDC Hingna,
Nagpur– 440028 M.S. India.
Tel. No.: (07104) 645114, Fax: 645114
E-Mail: training_ngp@igtr-aur.org

CROWN
RUBBER PRODUCTS

- **An ISO 9001-2008 Company,**
- **Compression, Vacuum, Injection Moulding Facility,**
- **In house Die making,**
- **In house compounding,**
- **Well-equipped physical laboratory.**
- **Manufacturing capacity of maximum 1200 by 1200 mm.**
- **We manufacture natural as well as various synthetic elastomer products.**


O RINGS


SEALS


METAL BONDED PRODUCTS


CUSTOM MADE PRODUCTS

We specialise in manufacture **FFKM** products.

- **FFKM**: **FFKM** (AS PER ASTM D1418) is a perfluoro elastomer with high chemical resistance; it can withstand around 1600 different chemicals in their pure and aggressive form for a longer service life at high temperature.
- The FFKM raw material we use is manufactured and supplied by 3M, a world renowned company **who have validated our Processing parameters for FFKM moulding finished components.**
- Lower swell leads to less degradation thus reducing maintenance.
- High temperature resistance with low compression set results in longer service life.
- FFKM is used where **AGGRESSIVE CHEMICAL ENVIRONMENTS** are present, wherein other elastomers cannot sustain.
- FFKM is being used in **SEMICONDUCTOR** processing, **PETROLEUM, CHEMICAL** industry as well as **HIGH TEMPERATURE** applications.

Properties of FFKM:

Hardness:	60-90 SHORE A
Temperature:	UP TO 300°C *
Impermeability:	EXCELLENT *
Chemical Resistance:	UP TO 1600 CHEMICALS INCLUDING PLASMAS *

* Results may vary as per end application

CONTACT US:
CROWN RUBBER PRODUCTS
Unit I & HO: J-221, MIDC, BHOSARI,
Unit II: J-206/1, MIDC, BHOSARI
PUNE 411 026, INDIA
TEL: +91 20 27130721 / 46763221
FAX: +91 20 27130221
WEB: **www.crownrubber.net**
EMAIL: info@crownrubber.net

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- ★ PROCESS AID FROM FINE ORGANICS

308 – 313, Rajasthan Technical Center, Patanwala Estate, L.B.S. Marg, Ghatkopar (W), Mumbai-400086
Tel: 25001556 / 25003282 Fax: 25003282
E-mail Id: attuned11@yahoo.com / attuned03@yahoo.com

WORLD RENOWNED PUBLICATIONS ON RUBBER TECHNOLOGY & RELATED SUBJECTS

Book Code	Author	Title	Year
013811	AKOVALI	Plastics, Rubber & Health	2007
003432	ATHEY	Emulsion Polymer Technology.	1991
003204	BARLOW	Rubber Compounding: Principles, Materials, Techniques. 2 e/d.	1993
014280	BAUMAN	Fatigue, Stress & Strain of Rubber Components - Guide for Design Engineers.	2008
014029	BHOWMICK	Current Topics in Elastomers Research	2008
011807	BHOWMICK	Handbook of Elastomers: New Developments & Technology, 2/e	2000
003731	BHOWMICK	Rubber Products Manufacturing Technology.	1994
009318	BLACKLEY	Polymer Latices : Science & Technology (3 Volume Set)	1997
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016735	BRASSARD	The Silicone Elastomer Handbook - A Guide to Applied Silicone Elastomer Technology	2010
016672	BROER	Cross-Linked Liquid Crystalline Systems from Rigid Polymer Networks to Elastomers	2011
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Book Code	Author	Title	Year
013295	DURAIRAJ	Resorcinol - Chemistry, Technology & Applications.	2005
012334	EBNESAJJAD	Fluoroplastics : Vol. 1 - Non-Melt Processible Fluoroplastics.	2000
012335	EBNESAJJAD	Fluoroplastics : Vol. 2 - Melt Processible Fluoropolymers.	2003
011295	ERBIL	Vinyl Acetate Emulsion Polymerization and Copolymerization with Acrylic Monomers.	2000
011136	ESUMI	Polymer Interfaces and Emulsions.	1999
013273	FAKIROV	Handbook of Condensation Thermoplastic Elastomers.	2005
005003	FREAKLEY	Rubber Processing & Production Organization	1985
016395	FUNT	Mixing of Rubber	2009
016954	GALIMBARTI	Rubber Clay Nanocomposites-Science, Technology And Applications	2011
013480	GOGOTSI	Carbon Nanomaterials	2006
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007039	HILYARD	Low Density Cellular Plastics: Physical Basis of Behaviour	1994
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011784	JOHNSON	Rubber Processing: An Introduction.	2001
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013465	MCKEEN	Fluorinated Coatings and Finishes Handbook - The Definitive User's Guide.	2006
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003225	SCHWEITZER	Corrosion Resistance of Elastomers.	1990
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014618	STRITSKE	Custom Molding of Thermoset Elastomers : Tooling Technology, Processes & Secondary Operations	2009
010971	SZYCHER	Szycher's Handbook of Polyurethanes.	1999
013959	THOMAS	Rubber Nanocomposites: Preparation, Properties & Applications	2009
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007937	WHITE	Rubber Processing : Technology, Materials, Principles.	1995
014622	WHITE	Rubber Technologist's Handbook - Vol. 2	2009
011928	WHITE	Rubber Technologist's Handbook - Vol.1	2001

All India Rubber Industries Association
Indian Rubber Industry at a Glance
(Approximate Indicator)

	Parameter	A/c Unit	2012-13	2013-14	2014-15
1	**Annual Turnover**				Estimated
	Non-Tyre Sector	Crore Rs.	29000	31000	32000
2	**Exports**				
	Rubber Manufactured Products	Crore Rs.	5400	6400	6500
3	**Revenue to Govt. Exchequer (Total)**				
	Through Excise Duties & Cess	Crore Rs.	8500	9500	11000
	Through Import Duties	"	5000	5500	6000
	Total	"	**13500**	**15000**	**17000**
4	**Rubber Production (Total)**				
	Natural Rubber	Metric Tonnes	913700	844000	950000
	Synthetic Rubber	"	108692	112886	125000
	Reclaim Rubber	"	115670	124325	130000
	Total	"	**1138062**	**1081211**	**1205000**
5	**Rubber Consumption (Total)**				
	Natural Rubber	Metric Tonnes	972705	981520	1010000
	Synthetic Rubber	"	444160	483575	500000
	Reclaim Rubber	"	114595	123725	130000
	Total	"	**1531460**	**1588820**	**1640000**
6	**Rubber Imports (Total)**				
	Natural Rubber	Metric Tonnes	217365	325190	350000
	Synthetic Rubber	"	329585	371839	450000
	Total	"	**546950**	**697029**	**800000**
7	**Rubber Exports**				
	Natural Rubber	Metric Tonnes	**30451**	**5398**	**25000**
8	**Miscellanceous**				
	Total No. of units	Number	4550	4550	4550
	No. of Tyre Factories	"	57	57	57
	No of Large/Medium Scale Units	"	500	500	500
	No of SSI/ Tiny Units	"	3993	3993	3993
	Employment Generation	"	525000	535000	555000

* These pertain to items covered under chapter 40 only

NB: India is fourth largest producer of Natural Rubber next to Thailand, Indonesia & Malaysia

Second largest consumer of natural rubber next to China

Fourth largest consumer of all rubber next to China, USA & Japan

Production and consumption in India (Tonnes)

Year	Production		Consumption	
	NR	SR	NR	SR
1950	15599	-	17735	-
1955	23444	-	27543	106
1960	24794	-	-	4340
1965	49387	15780	64676	20414
1995	500000	67000	516000	133000
2013	913700	108692	972705	444160
2014	774000	112886	981520	483575

Table 1: Production of Natural Rubber in ANRPC Member Countries ('000 M. Tonnes)

Country	2009	2010	2011	2012	2013 (p)
Thailand	3164	3252	3569	3778	4170
Indonesia	2440	2735	2990	3040	3180
Vietnam	711	752	789	864	949
China	643	687	727	802	856
India	820	851	893	919	849
Malaysia	857	939	996	923	826
Sri Lanka	137	153	158	152	130
Philippines	98	99	106	111	111
Cambodia	35	42	51	65	85
Total	8905	9510	10279	10654	11156

p: provisional

Table 2: ESTIMATED PER CAPITA CONSUMPTION OF NATURAL AND SYNTHETIC RUBBER (kilograms)							
Country	2007	2008	2009	2010	2011	2012p	2013p
Japan	16.14	15.75	11.51	13.58	13.46	13.27	13.13
Germany	10.76	10.16	8.67	10.45	10.93	9.84	10.14
Canada	10.24	8.88	7.73	9.80	10.04	9.41	9.02
U.S.A.	9.86	9.04	6.95	8.51	9.21	8.58	8.19
China	4.57	4.82	5.71	6.04	6.14	6.54	7.02
France	8.79	7.94	5.32	6.72	7.41	6.39	5.76
Brazil	4.35	4.37	3.78	4.79	4.48	4.48	4.21
Italy	6.80	6.20	4.31	5.16	5.52	4.61	4.39
U.K.	4.26	3.63	2.86	3.28	3.66	3.08	2.96
Australia	3.29	3.14	2.15	1.76	1.71	1.64	1.49
India	0.99	1.01	1.05	1.12	1.14	1.16	1.14
World	3.52	3.36	3.17	3.56	3.67	3.65	3.68

p:provisional. Source: Rubber Board

Table 3: India's Consumption Of All Kinds Of Rubber According To End-products - 2012-13 (tonnes)

	Natural Rubber (NR)	Synthetic Rubber (SR)	Reclaimed Rubber (RR)
Auto Tyres & Tubes	629060	325050	43440
Cycle Tyres & Tubes	79995	23840	26945
Camel Back	45245	19270	5810
Footwear	60290	37055	11590
Belts & Hoses	50480	15290	8890
Latex Foam	27985		
Dipped Goods	39980		
Others	39670	23655	17920
Total:	972705	444160	114595

BEST COMPLIMENTS FROM

LATHIA RUBBER MANUFACTURING CO. PVT. LTD.

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Maratha Chamber of Commerce Industry & Agriculture
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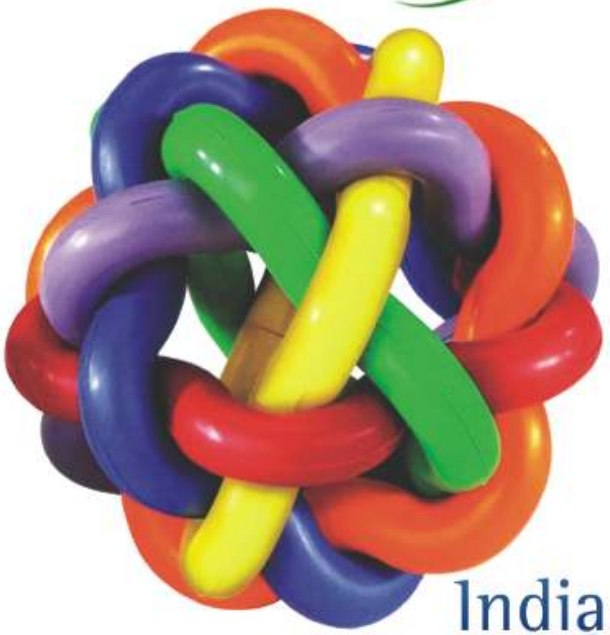

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