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RUBBER TECHNOLOGY

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Abstract: This report presents the study on incorporating various natural rubber for property improvement. Natural rubber being an elastomer with the unique attribute of being a renewable agricultural is of very importance for our uses.The transformation of rubbers or elastomers are dealt by rubber technology, such as automobile tires, rubber mats and, exercise rubber stretching bands. A wide range of rubber items areprocessed through such methods.

I. INTRODUCTION

Rubber Technology is a science field that studies transformation of rubbers or elastomers into various useful results. The processing of natural or synthetic rubber, latex etc. is also focused by this procedure. Rubber Engineering Technology students are provided a diverse background in which advanced coursework is included in the mixing and testing of rubber compounds for industrial purposes.
Rubber technology is referred to the involved science in the procedure of transformation in the rubber or elastomers into useful desired rubber products such as tyres, mats,boards etc. Rubber products can be classified into two types on the basis of its characteristics like raw rubber and Latex products.

TWO TYPES OF RUBBER NAMELY:

- **Natural Rubber**
- It is obtained from rubber trees as latex, which is a colloidal dispersion of solid particles of the polymer

- **Synthetic Rubber**
- It is mostly produced from petroleum by the same polymerization techniques like other polymers.

Rubber categories:

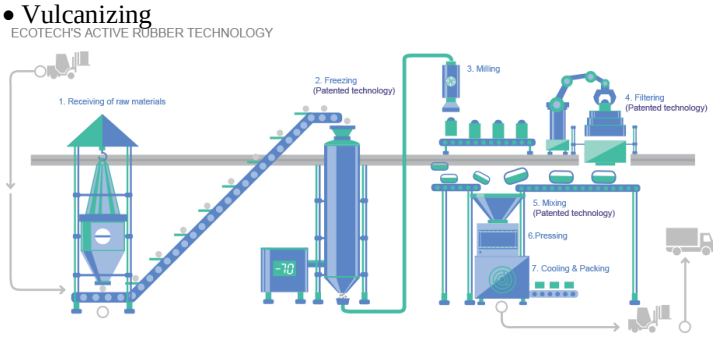
- Raw Rubber – The prime material for any rubber product that determines thefinal product.
- Semi-manufactured product – The processing in raw rubber with chemicals and fillers. It is malleable and plastic as well.
- Final product – It is the yield of vulcanisation process, the compound inherits its elastic properties and forms the final product.

Product Processing

Many rubber products like tyres, mats, moulded or extruded products, etc. They have their unique manufacturing specifications.

Four major rubber processing steps are listed below.

- Compounding
- Mixing
- Shaping
- Vulcanizing



Manufacturing Process of Rubber products

- Latex based adhesives manufacturing process
- Beltings Manufacturing Process
- Dipped Goods Manufacturing Process
- Extruded Rubber Goods manufacturing Process
- Footwear Manufacturing Process
- Hoses Manufacturing Process

- Latex thread – Manufacturing Process

Physical testing methods for rubber products

- Tensile test
- Hardness test
- Tear test
- Abrasion test
- Elongation test
- Leak test

Trends and technological impact for product manufacturing

Rubber product manufacturing is a technological process. Technological impact has been high in this industry and has improved the manufacturing process aiding the industry to a greater extent. Indian rubber product industry has also adapted the technological changes in the manufacturing process and have implemented in their system. Technology impact has majorly come through changes made in the machines used for manufacturing process. Rubber products are machine oriented and any improvements in the machine used leads to improvement in productivity and quality.

Global trends in Rubber Product Production

Rubber industries across the globe are constantly involved in R&D activities to enhance the manufacturing process. With the increasing awareness on the quality of the product, all the manufacturing companies are following best practices to deliver quality product. Innovations are made at machine level to produce more products, combine two or more processes and reduce the human intervention..

II. FUTURE SCOPE

A rubber material cannot be replaced by another material having its unique combination of properties. The development since the past has learnt us that blending of suitable materials may be successful. Techniques like dynamic vulcanization has been introduced. We will probably see increased use of thermos elastomers and reduced use f crosslinked elastomers. Important applications will come in the medical area as well as in the electronic and space areas. For tires natural rubber and SBR will be the logical choice if we want to have good comfort in eg. Our cars.

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REFERENCES

[1] A. D. Roberts (editor), "Natural rubber science and technology", Oxford University Press, Oxford (1988).
[2] I. Franta, "Elastomers and Rubber Compounding Materials", Elsevier, Amsterdam (1989).
[3] P.Meares, “Polymers. Structure and bulk properties”, van Nostrand, London, (1965).
[4] M. Mayes, Polymer Preprints, ACS, 43(2), 55-56 (2002).
[5] I. Khait and S.H. Carr, “Solid-state shear pulverization, A new polymer processing and powder technology”, SPE, ISBN No.1- 56676-803-9 Technomic Publishing Company, (2001). 6. S.K. De, A. Isayev, K. Khait, ”Rubber Recycling”, (2005), Taylor & Francis Group, New York.
[6] 97 L.R.G. Treloar, “The physics of Rubber Elasticity”, 3d edition, Clarendon Press, Oxford (1975).

