

The Complete Book on Rubber Processing and Compounding Technology (3rd Revised Edition)

Author: P.K. Tripathi

Format: Paperback

ISBN: 9788178331621

Code: NI174

Pages: 632

Price: Rs. 2,275.00 US\$ 58.00

Publisher: Asia Pacific Business Press Inc.

Usually ships within 5 days

Rubber processing and compounding refer to the process of transforming natural or synthetic rubber into various usable products, such as tyres, rubber seals, belts, and hoses. The rubber processing industry encompasses various methods of transforming raw rubber into useful products, which include blending, mixing, extrusion, molding, and curing.

Rubber compounding involves the addition of various additives, such as carbon black, antioxidants, curing agents, plasticizers, and other chemicals, to modify the physical and mechanical properties of the rubber. Compounding ingredients and techniques vary according to the end-use application and the desired properties of the final product. Rubber compounds are widely used in various industries, including automotive, construction, electrical, and healthcare. The unique properties of rubber compounds, such as durability, flexibility, and resistance to heat and chemicals, make them ideal for various applications.

The market for rubber processing and compounding is positive, with increasing demand for high-performance and environmentally sustainable rubber products. Key trends driving this growth include a growing demand for electric vehicles, advancements in tyre technology, and increased demand for rubber products in emerging markets.

The market is expected to grow at a steady rate in the coming years, with a compound annual growth rate (CAGR) of 5.3%. This growth can be attributed to the rising demand for high-performance and eco-friendly rubber products. The increasing demand for rubber processing and compounding services in the Asia-Pacific region is one of the primary drivers of the market growth. China and India are the key markets in the region, with high growth potential due to the growing automotive industry and government initiatives promoting the use of eco-friendly materials. Moreover, the increasing demand for tyres, rubber seals, gaskets, and hoses, coupled with advancements in the manufacturing process, is driving the growth of the market. Another trend driving the market is the growing focus on sustainability and reducing the carbon footprint. Many companies are investing in research and development to develop sustainable rubber products. The rubber processing and compounding industry is witnessing rapid growth in recent years. With the increasing demand for rubber products across various industries such as automotive, construction, healthcare, and electronics, the market outlook for this industry looks promising.

The book's main contents are Mixing Technology of Rubber, Techniques of Vulcanization, Rubber Vulcanization, Rubber Compounding, Rubber Gloves Manufacturing, Condoms Manufacturing, Rubber Band Manufacturing, Latex Mattress Manufacturing, Rubber Bushings Production, Rubber Gasket Manufacturing, Rubber Sheets Manufacturing, Rubber Tubing and Its Manufacturing, Tyre Manufacturing, Waste Tyre Recycling Process, Hoses Manufacturing, Conveyor Belt Production, Latex and Foam Rubber, Silicone Rubber, Reclaimed Rubber, Rubber Natural. The Manufacturing Process, Machinery Equipment Details, and Photographs with Suppliers Contact Details are also given.

A total guide to manufacturing and entrepreneurial success in today's most demandable rubber processing

and compounding industry. This book is one-stop guide to one of the fastest growing sectors of the rubber processing and compounding industry, where opportunities abound for manufacturers, retailers, and entrepreneurs. This is the only complete handbook on the commercial production of rubber. It serves up a feast of how-to information, from concept to purchasing equipment.

Contents

- 1. Introduction
 - 1.1. Rubber Applications
 - 1.2. Types of Rubber
 - 1.2.1. Natural Rubber
 - 1.2.2. Synthetic Rubber
 - 1.3. Production of Synthetic Rubber
 - 1.4. Market of Rubber
- 2. Mixing Technology of Rubber
 - 2.1. Introduction
 - 2.2. Mixing Machinery for Rubber
 - 2.2.1. Two-roll Mills
 - 2.2.2. Internal Batch Mixers
 - 2.2.3. Continuous Mixers
 - 2.2.4. Development of the Banbury Mixer
 - 2.2.5. Operating Variables
 - 2.3. Mixing Cycles and Procedures
 - 2.3.1. Unit Operations in Mixing
 - 2.3.2. Single-Pass Versus Multiple-Pass Mixing
 - 2.3.3. Types of Mix Cycle
 - 2.3.4. Analysis of Changes to the Mix Procedure
 - 2.4. Mill Mixing
 - 2.4.1. Acceleration of First-pass Compound
 - 2.4.2. Mill Mixing of Speciality Compounds
 - 2.4.3. Acceleration in Line with Internal Mixing
 - 2.5. Quality Control And The Mixing Process
 - 2.5.1. Testing of Raw Materials
 - 2.5.2. Elastomers as Raw Materials
 - 2.5.3. Control of Composition
 - 2.5.4. Tracking the Mix Cycle
 - 2.5.5. Compound Testing
 - 2.6. Statistical Process Control For Industrial Mixing
 - 2.6.1. Basic SPC Charting
 - 2.6.2. Rheometer Data and its Meaning
 - 2.6.3. Mixing Control Software
 - 2.7. Additives that Affect Mixing
 - 2.7.1. Peptisers in Natural Rubber
 - 2.7.2. Peptisers in SBR
 - 2.7.3. Peptisers in Sulphur-containing Polymers
 - 2.7.4. Additives to Increase Viscosity
 - 2.7.5. Preventing Unwanted Chemical Reactions
 - 2.8. Operation and Maintenance of Mixing Equipment
 - 2.8.1. Inspection of Banbury Mixers
 - 2.8.2. Inspection at the Mezzanine Level
 - 2.8.3. Inspection of the Banbury Platform

- 2.8.4. Mixer Maintenance and Lubrication
- 2.8.5. Anticipating Required Service
- 2.8.6. Dust Stop Maintenance
- 2.8.7. SSA Dust Stops
- 2.8.8. Banbury Mixer — Hydraulic Dust Stops
- 2.9. Mixing Procedures for Specific Compounds
 - 2.9.1. EPDM Expansion Joint Cover
 - 2.9.2. Expansion Joint Intermediate Layer
 - 2.9.3. Traffic Counter Treadle Cover
 - 2.9.4. SBR/IR Belt Cover
 - 2.9.5. EPDM Low Voltage Electrical Connector
 - 2.9.6. Peroxide-cured Black-filled EPDM Compounds
 - 2.9.7. EPDM Concrete Pipe Gasket
 - 2.9.8. Injection-moulded NBR Gasket
 - 2.9.9. CR/SBR Blend
 - 2.9.10. Low Durometer CR/SBR Blend
 - 2.9.11. Non-black CR for Injection Moulding
 - 2.9.12. Hard Rubber Industrial Wheel
 - 2.9.13. High Durometer NBR Masterbatch
 - 2.9.14. NBR/PVC Cable Jacket
 - 2.9.15. NBR/PVC/SBR Blend
 - 2.9.16. Butyl Masterbatch
 - 2.9.17. Butyl Masterbatch, Heat Interacted
 - 2.9.18. Chlorobutyl/NR Blend
 - 2.9.19. CSM CORD Jacket
 - 2.9.20. Non-black Millable Urethane
- 2.10. Mixing Wire and Cable Compounds
 - 2.10.1. Some Major Changes
 - 2.10.2. Tempered Water
 - 2.10.3. Power-controlled Mixing
 - 2.10.4. Energy Conservation
- 2.11. Mixing Ethylene-Propylene Diene Rubber
 - 2.11.1. Composition of EPDM Elastomers
 - 2.11.2. Variables in EPM and EPDM Elastomers
 - 2.11.3. How Processing Relates to Structure and Rheology
 - 2.11.4. Practical Guidelines for Mixing EP Elastomers
 - 2.11.5. Downstream Processing Equipment
 - 2.11.6. Summary
- 2.12. Mixing of Tyre Compounds
 - 2.12.1. Rework
 - 2.12.2. Phase Mixing
 - 2.12.3. Natural Rubber Viscosity Reduction
 - 2.12.4. Measurement of Mixing Efficiency
- 2.13. Mixing Fluoroelastomer (FKM) Compounds
 - 2.13.1. Special Considerations
 - 2.13.2. Raw Materials
 - 2.13.3. Typical Formulations
 - 2.13.4. Internal Mixing
 - 2.13.5. Mill Mixing
 - 2.13.6. Summary
 - 2.13.7. Accounting Methods
- 2.14. Continuous Mixing

- 2.14.1. Farrel Continuous Mixer
- 2.14.2. Operating Principles of the FCM
- 2.14.3. Commercial Applications for the FCM
- 2.14.4. Farrel Mixing Venting Extruder (MVX)
- 2.15. Evaluating the Performance of Internal Mixers
- 2.15.1. Designing the Rotor
- 2.15.2 Analysis of Dispersive Mixing
- 3. Techniques of Vulcanization
- 3.1. Introduction
- 3.1.1. Pressureless Vulcanization
- 3.2. Pressurized Vulcanization
- 3.2.1. Rubber Moulding
- 3.2.2. Factors of Moulding
- 3.2.3. Moulding
- 3.2.4. Compression Moulding
- 3.2.5. Transfer Moulding
- 3.2.6. Injection Moulding
- 3.3. Mould Shrinkage
- 3.4. Moulding Defects
- 3.5. Pressurized Liquid Continuous Vulcanization
- 3.6. High-Velocity Gas Cure
- 3.6.1. Helicure
- 3.7. Finishing
- 3.8. Recycling of Vulcanized Rubber Products
- 3.8.1. Buffed Tread Crumb
- 3.8.2. Incineration and Pyrolysis of Tyres
- 3.8.3. Reclaimed Rubber
- 4. Rubber Vulcanization
- 4.1. Vulcanization And Its Effects
- 4.2. Vulcanization Reaction Stages
- 4.3. Vulcanization of Thick Rubber Articles
- 4.4. Determination of State of Vulcanization
- 4.4.1. Physical Property Tests
- 4.4.2. Free Sulphur Determination
- 4.4.3. Solvent-swell Method
- 4.4.4. Mooney-Rivlin Equilibrium Modulus
- 4.4.5. Differential Scanning Calorimetry
- 4.4.6. Determination of Spring Constant
- 4.5. Vulcanization Systems
- 4.5.1. Sulphur Vulcanization
- 4.6. Overall Course of Accelerated Sulphur Vulcanization
- 4.6.1. Peroxide Crosslinking
- 4.6.2. Resin Vulcanization
- 4.6.3. Electron Beam Vulcanization
- 4.6.4. Nitroso Compounds
- 4.6.5. Metal Oxides
- 5. Rubber Compounding
- 5.1. Introduction
- 5.1.1. General Compounding Principles
- 5.2. Vulcanizate Physical Properties and their Significance
- 5.2.1. Tensile Strength
- 5.2.2. Tear Resistance
- 5.2.3. The Crescent Tear Test

- 5.2.4. The Hardness of Rubber
- 5.2.5. Set
- 5.2.6. Abrasion Resistance
- 5.2.7. Flex Cracking Resistance
- 5.2.8. Resilience
- 5.2.9. Heat Build-up
- 5.2.10. Temperature Resistance
- 5.3. Compound Properties Desired for Different Rubber Compounds
 - 5.3.1. Tyres
 - 5.3.2. Retreading Materials
 - 5.3.3. Conveyor Belting, Transmission Belting and Hose
 - 5.3.4. Footwear
 - 5.3.5. Rubber Roller
 - 5.3.6. Medical Applications
 - 5.3.7. 'O' rings and Seals
- 5.4. Compounding Ingredients
 - 5.4.1. Rubber Blends
 - 5.4.2. Master Batches
 - 5.4.3. Choice of Rubber
 - 5.4.4. Fillers
 - 5.4.5. Vulcanizing Agents
 - 5.4.6. Peptizers
 - 5.4.7. Accelerators
 - 5.4.8. Activators
 - 5.4.9. Anti-oxidants
 - 5.4.10. Retarders
 - 5.4.11. Softeners and Plasticizers
 - 5.4.12. Rubber Crumb
 - 5.4.13. Factice
 - 5.4.14. Processing Aids
 - 5.4.15. Special Purpose Additives
- 5.5. Basic Compound Formulations
 - 5.5.1. Unvulcanized compound properties
 - 5.5.2. Vulcanized compound properties
- 6. Rubber Gloves Manufacturing
 - 6.1 Synthetic rubber gloves
 - 6.1.1. Nitrile gloves
 - 6.1.2. Vinyl gloves
 - 6.2. Use of Rubber Gloves
 - 6.2.1. Medical Use
 - 6.2.2. Food Preparation
 - 6.2.3. Cleaning
 - 6.2.4. Salons & Spas
 - 6.2.5. Automotive Work
 - 6.2.6. Construction
 - 6.2.7. Security & Police Investigations
 - 6.2.8. Laboratories
 - 6.2.9. Gardening & Outdoor Work
 - 6.2.10. Child Care
 - 6.3. Can Reuse Rubber Gloves?
 - 6.3.1. Reusable
 - 6.3.2. Disposable

- 6.4. Glove Manufacturing Process
 - 6.4.1. Latex Collection
 - 6.4.2. Coagulant Dipping
 - 6.4.3. Drying
 - 6.4.4. Latex Dipping
 - 6.4.5. Leaching
 - 6.4.6. Beading
 - 6.4.7. Vulcanization
 - 6.4.8. Post Leaching
 - 6.4.9. Slurry Dipping
 - 6.4.10. Stripping
 - 6.4.11. Tumbling
 - 6.4.12. Quality Control
 - 6.4.13. Packing
- 7. Condoms Manufacturing
 - 7.1. History
 - 7.2. Manufacturing process
 - 7.2.1. Collecting the raw materials
 - 7.2.2. Compounding
 - 7.2.3. Storage
 - 7.2.4. Dipping
 - 7.2.5. Tumbling
 - 7.2.6. Condom Testing Procedures
 - 7.2.6. Packaging
 - 7.2.7. Packaging for Retail
 - 7.2.8. The finished product
- 8. Rubber Band Manufacturing
 - 8.1. Rubber Band Dimensions and Measuring
 - 8.2. Sizes
 - 8.3. Rubber Types Used in Rubber Bands
 - 8.4. Rubber Band Uses
 - 8.5. Applications of Rubber Bands
 - 8.6. The Manufacturing Process
 - 8.6.1. Processing the natural latex
 - 8.6.2. Mixing and milling
 - 8.6.3. Extrusion
 - 8.6.4. Curing
 - 8.6.5. Quality Control
- 9. Latex Mattress Manufacturing
 - 9.1. Types of Latex
 - 9.2. Benefits of a Latex Mattress
 - 9.3. Manufacturing Process
 - 9.3.1. Collecting the Raw Material
 - 9.3.2. Processing of Liquid Latex
 - 9.3.3. Forming the latex foam
 - 9.3.4. Inspect the Latex Foam Layers for Quality
 - 9.3.5. Finishing the Latex Foam with Fine Details
 - 9.3.6. Covering the Latex Foam with Fabric
- 10. Rubber Bushings Production
 - 10.1. Rubbers Used in Rubber Bushing Manufacture
 - 10.1.1. Natural Rubber
 - 10.1.2. Styrene Butadiene Rubber (SBR)
 - 10.1.3. Nitrile Butadiene Rubber (NBR)

- 10.1.4. Silicone Rubber
- 10.1.5. Ethylene Propylene Diene Monomer (EPDM)
- 10.2. Uses of Rubber Bushings
 - 10.2.1. Automotive Manufacturing
 - 10.2.2. Rubber Bushings in Skateboards
 - 10.2.3. Shock Bushings
 - 10.2.4. Tank Bushing
 - 10.2.5. Bushings in Fans
- 10.3. How are Bushings Made?
- 10.4. Extrusion Procedure
 - 10.4.1. Raw Rubber Compound
 - 10.4.2. Feed Hopper
 - 10.4.3. Extruding the Rubber Compound
 - 10.4.4. Hot and Cold Feed Extrusion
 - 10.4.5. Vulcanization Process
 - 10.4.6. In Line Curing and Off Line Curing
- 11. Rubber Gasket Manufacturing
 - 11.1. Industrial Applications of Rubber Gaskets
 - 11.1.1. Pipe Fittings and Industrial Piping
 - 11.1.2. Plumbing and Water Utility
 - 11.1.3. Automotive
 - 11.1.4. Aerospace
 - 11.1.5. Marine
 - 11.1.6. Tanks, Vessels, and Containers
 - 11.1.7. Manufacturing of Food and Drugs
 - 11.2. Manufacturing Process
 - 11.2.1. Die-Cutting
 - 11.2.2. Water Jet Cutting
 - 11.2.3. Laser Cutting
 - 11.2.4. Flash Cutting
 - 11.2.5. Injection Molding
 - 11.2.6. Extrusion of Rubber Gaskets
 - 11.3. Processes of Vulcanization
 - 11.3.1. Steam Curing
 - 11.3.2. Continuous Curing
 - 11.3.3. Hot Splicing
- 12. Rubber Sheets Manufacturing
 - 12.1. Benefits of Rubber Sheets
 - 12.2. Types of Rubber Sheets
 - 12.2.1. Natural Rubber Sheets
 - 12.2.2. Neoprene Rubber Sheets
 - 12.2.3. Nitrile Rubber Sheets
 - 12.2.4. Hydrogenated Nitrile (HNBR)
 - 12.2.5. Rubber Ethylene Propylene (EPDM Rubber Sheets)
 - 12.2.6. Silicone Rubber Sheets
 - 12.2.7. Fabric Reinforced Rubber Sheets
 - 12.2.8. Styrene-Butadiene Rubber (SBR) Sheet
 - 12.2.9. Viton Sheets
 - 12.2.10. Butyl (IIR)
 - 12.3. Rubber Sheet Materials
 - 12.3.1. Thermoplastic Polymers
 - 12.3.2. Thermoset Polymers
 - 12.3.3. Rubbers in Rubber Sheets

- 12.3.4. Compounding Ingredients
- 12.4. Manufacturing Process of Rubber Sheets
 - 12.4.1. Molding
 - 12.4.2. Extrusion
 - 12.4.3. Latex Dipping
 - 12.4.4. Calendering
 - 12.4.5. Rubber Sheet Joining
- 13. Rubber Tubing and Its Manufacturing
 - 13.1. Rubber Materials Used in the Production of Rubber Tubing
 - 13.2. Types of Rubber Materials
 - 13.2.1. Fluoroelastomer Rubber Tubing (FKM or Viton™)
 - 13.2.2. Butyl Rubber Tubing
 - 13.2.3. Hypalon Rubber Tubing (Chloro sulfonated Polyethylene of CSM)
 - 13.2.4. Natural Rubber Tubing (NR)
 - 13.2.5. Neoprene Rubber Tubing (Polyisoprene)
 - 13.2.6. Nitrile Rubber Tubing
 - 13.2.7. Styrene Butadiene Tubing (SBR)
 - 13.2.8. Silicone Rubber Tubing
 - 13.2.9. Thermoplastic Rubber Tubing (TPE)
 - 13.2.10. Ethylene Propylene Diene Monomer Rubber Tubing (EPDM)
 - 13.2.11. Hytrel® Rubber Tubing
 - 13.3. Types of Rubber Tubing
 - 13.3.1. Food Grade Rubber Tubing
 - 13.3.2. Medical Grade Rubber Tubing
 - 13.3.3. Conductive Rubber Tubing
 - 13.3.4. Microbore Rubber Tubing
 - 13.3.5. Air Rubber Tubing
 - 13.3.6. Chemical Rubber Tubing
 - 13.3.7. Heat Shrink Rubber Tubing
 - 13.3.8. Fabric Reinforced
 - 13.3.9. Non-Reinforced Rubber Tubing
 - 13.4. Industries that Use Rubber Tubing
 - 13.4.1. Automotive
 - 13.4.2. Agriculture
 - 13.4.3. Aerospace
 - 13.4.4. Food Processing
 - 13.4.5. Marine
 - 13.4.6. Medical and Pharmaceutical
 - 13.5. Manufacturing Process
 - 13.6. Mandrel Process
 - 13.6.1. Rubber Roll
 - 13.6.2. Milling
 - 13.6.3. Cutting
 - 13.6.4. Mandrel
 - 13.6.5. Reinforcement Layer
 - 13.6.6. Final Layer
 - 13.6.7. Taping
 - 13.6.8. Vulcanization
 - 13.6.9. Removing from the Mandrel
 - 13.7. Extrusion Method

- 13.7.1. Feeding
- 13.7.2. Revolving Screw
- 13.7.3. Rubber Tubing Die
- 13.7.4. Vulcanization
- 14. Tyre Manufacturing Process
 - 14.1. The Parts of a Tyre
 - 14.1.1. Beads
 - 14.1.2. Belt
 - 14.1.3. Ply
 - 14.1.4. Sidewall
 - 14.1.5. Sipe and Groove
 - 14.1.6. Shoulder
 - 14.1.7. Tread
 - 14.2. Raw Materials
 - 14.3. Production Process
 - 14.3.1. Body, beads, and tread
 - 14.3.2. Tyre-building machine
 - 14.3.3. Curing
- 15. Waste Tyre Recycling Process
 - 15.1. Application of Recycling Waste Rubber
 - 15.2. Benefits of Tyre Recycling
 - 15.2.1. Creates New Products
 - 15.2.2. Reduces Volume of Tyre on Landfill Space
 - 15.2.3. Helps to Prevent Diseases
 - 15.2.4. Prevents Fires and Pollution
 - 15.3. Pyrolysis Process for Waste Rubber Tyre Recycling
 - 15.4. Application of Products Derived From Pyrolysis Process
 - 15.5. Process of Tyre Recycling
 - 15.5.1. Collection of Waste Tyres
 - 15.5.2. Tyre Processing (Shredding)
 - 15.5.3. Steel Liberation
 - 15.5.4. Screening Stage
 - 15.5.5. Cleaning Stage
 - 15.5.6. Packaging and Transporting Stage
- 16. Hoses Manufacturing
 - 16.1. Design of Hoses
 - 16.2. Hose Manufacture
 - 16.3. Braided/Spiralled Hoses
- 17. Conveyor Belt Production
 - 17.1. Parts of a Conveyor Belt
 - 17.1.1. Strength member
 - 17.1.2. Inter ply rubber
 - 17.1.3. Cover rubber
 - 17.1.4. Breaker
 - 17.2. Manufacturing Process
 - 17.2.1. Fabric preparation
 - 17.2.2. Preparation of cover rubber
 - 17.2.3. Slitting of plies
 - 17.2.4. Raw belt making
 - 17.2.5. Vulcanization
 - 17.2.6. Inspection and repair
 - 17.2.7. Finished belt testing
 - 17.2.8. Belt grade

- 17.3. PVC Belting
- 17.4. Steel Cord Belting
- 17.5. Advantages of steel cord belting
- 18. Latex and Foam Rubber
 - 18.1. Introduction
 - 18.2. Products From Latex
 - 18.2.1. Selection of Raw Materials
 - 18.2.2. Preparation of Raw Materials
 - 18.2.3. Compounding and Design
 - 18.2.4. Maturation
 - 18.2.5. Processing and shaping
 - 18.2.6. Dipped Goods
 - 18.2.7. Latex Thread
 - 18.2.8. Vulcanisation
 - 18.2.9. Hot Air Cure
 - 18.2.10. Hot Water Vulcanisation
 - 18.2.11. Autoclave Vulcanisation
 - 18.2.12. Radiation Vulcanisation
 - 18.2.13. Ultrasonic Wave Curing
 - 18.2.14. Testing of Rubber Products
 - 18.2.15. Packing and Marketing
 - 18.2.16. Conclusions and Recommendations
 - 18.3. Latex Foam
 - 18.3.1. Manufacture of Latex Foam
 - 18.3.2. Dunlop Process
 - 18.3.3. Mechanism of Gelling
 - 18.3.4. Compounding
 - 18.3.5. Foaming and Gelling
 - 18.3.6. Construction of Moulds
 - 18.3.7. Curing
 - 18.3.8. Washing
 - 18.3.9. Drying
 - 18.3.10. Finishing
 - 18.4. Common Defects in Foam Making
 - 18.4.1. Shrinkage
 - 18.4.2. Foam Collapse
 - 18.4.3. Setting
 - 18.4.4. Complete Distortion of the Foam
 - 18.5. Estimation of Protein Contamination in Latex
 - 18.5.1. Protein estimation protocol
 - 18.5.2. Conclusion
- 19. Silicone Rubber
 - 19.1 Introduction
 - 19.2. Types of Silicone Rubber
 - 19.2.1. Electronics and Electrical Industries
 - 19.2.2. Silicone Rubbers to Mimic Flesh
 - 19.3. Synthesis Of Silicone Polymers
 - 19.4. Vulcanisation
 - 19.5. Compounding Ingredients
 - 19.5.1. Silicone Polymers
 - 19.5.2. Silicone Rubber Elastomers
 - 19.5.3. Reinforcing Fillers
 - 19.5.4. Semireinforcing or Extending Fillers

- 19.5.5. Additives
- 19.5.6. Curing Agents
- 19.6. Compounding
 - 19.6.1. Mixing
- 19.7. Fabricating
 - 19.7.1. Freshening
 - 19.7.2. Moulding
 - 19.7.3. Extrusion
 - 19.7.4. Calendering
 - 19.7.5. Dispersion Coating of Fabric
 - 19.7.6. Heavy-duty Hose
 - 19.7.7. Bonding
 - 19.7.8. Bonding Unvulcanised Silicone Rubber
 - 19.7.9. Bonding Vulcanised Silicone Rubber
 - 19.7.10. Post-baking
- 19.8. Liquid Silicone Rubber Compounds
 - 19.8.1. Condensation Cure—One-component
 - 19.8.2. Condensation Cure—Two-component
 - 19.8.3. Addition Cure
- 19.9. Relation Between Properties of Crude and Cured Silicone Compounds
- 20. Reclaimed Rubber
 - 20.1. Introduction
 - 20.2. Types of Reclaim
 - 20.2.1. Whole Tyre Reclaim
 - 20.2.2. Minimum Staining Reclaim
 - 20.2.3. Drab and Coloured Reclaims
 - 20.2.4. Butyl Reclaim
 - 20.3. Evolution of Reclaiming Processes
 - 20.4. Reclaiming Processes
 - 20.4.1. Scrap-rubber Preparation
 - 20.4.2. Reclaimed Rubber
 - 20.4.3. Digester Process
 - 20.4.4. Reclaimator Process
 - 20.4.5. Pan Process
 - 20.4.6. Engelke Process
 - 20.4.7. Testing and Evaluations of Reclaimed Rubber
 - 20.5. Dynamic Devulcanisation
 - 20.5.1. Millroom Operations
 - 20.6. The Advantages of Using Reclaimed Rubber
 - 20.6.1. Special Strengths Through Reclaiming
 - 20.6.2. Further Advantages of Reclaiming—Applications
 - 20.6.3. Major Uses of Reclaimed Rubber
 - 20.7. Rubberised Asphalt
 - 20.7.1. Applications
 - 20.8. Reclamation of Waste Rubber from Latex Based Rubber Industries
 - 20.8.1. Process
 - 20.8.2. Characterisation of Reclaimed Waste Latex Rubber (WLR)
- 21. Rubber Natural
 - 21.1. Agriculture
 - 21.2. Exploitation

- 21.3. Latex Composition
- 21.4. Types and Grades
- 21.5. Production
- 21.6. Latex Concentrate
- 21.7. Processing
- 21.8. Chemistry
- 21.9. Physical Properties
- 21.10. Economic Aspects
- 21.11. Applications
- 22. Flow Diagram and Factory Layout
- 23. Photographs of Plant and Machinery with Suppliers Contact Details
 - Waste Tyre Recycling Machine
 - Glove Making Machine
 - Auto Latex Condom Making Machine
 - Rubber Open Mixing Mill
 - Automatic Rubber Sheeting Machine
 - Rubber Bands Cutting Machine
 - Rubber Gasket Cutting Machine
 - Rubber Hose Machine
 - Rubber Tire Crusher Machine
 - Tyre Cutter
 - Rubber Dispersion Kneaders
 - Fully Automatic Rubber Bale Cutter
 - Rubber Calender Machine
 - Tyre Block Cutter
 - Rubber Extruder
 - Tyre Shredder Machine
 - Hydraulic Presses
 - Tyre Building Machine
 - Cold Feeding Extruder
 - Tyre Building Machine
 - Rubber Bushing Making Machine
 - Rubber Vulcaniser
 - Tyre Strip Cutting Machine
 - Mixing Mills
 - Compression Moulding Press
 - Tyre Ring Cutter
 - Rubber Tube Making Machine
 - Tyre Strip Cutter
 - Rubber Refiner Mill
 - Injection Moulding
 - Cyclone Separator
 - Banbury Mixer
 - Tyre Re-Treading Machine
 - Granulator
 - Stripping Column

About NIIR

NIIR PROJECT CONSULTANCY SERVICES (NPCS) is a reliable name in the industrial world for offering integrated technical consultancy services. NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.

Our various services are: Detailed Project Report, Business Plan for Manufacturing Plant, Start-up Ideas, Business Ideas for Entrepreneurs, Start up Business Opportunities, entrepreneurship projects, Successful Business Plan, Industry Trends, Market Research, Manufacturing Process, Machinery, Raw Materials, project report, Cost and Revenue, Pre-feasibility study for Profitable Manufacturing Business, Project Identification, Project Feasibility and Market Study, Identification of Profitable Industrial Project Opportunities, Business Opportunities, Investment Opportunities for Most Profitable Business in India, Manufacturing Business Ideas, Preparation of Project Profile, Pre-Investment and Pre-Feasibility Study, Market Research Study, Preparation of Techno-Economic Feasibility Report, Identification and Section of Plant, Process, Equipment, General Guidance, Startup Help, Technical and Commercial Counseling for setting up new industrial project and Most Profitable Small Scale Business.

NPCS also publishes various process technology, technical, reference, self employment and startup books, directory, business and industry database, bankable detailed project report, market research report on various industries, small scale industry and profit making business. Besides being used by manufacturers, industrialists and entrepreneurs, our publications are also used by professionals including project engineers, information services bureau, consultants and project consultancy firms as one of the input in their research.

Our Detailed Project report aims at providing all the critical data required by any entrepreneur vying to venture into Project. While expanding a current business or while venturing into new business, entrepreneurs are often faced with the dilemma of zeroing in on a suitable product/line.

NIIR PROJECT CONSULTANCY SERVICES , 106-E, Kamla Nagar, New Delhi-110007, India. **Email:** npcs.india@gmail.com **Website:** NIIR.org

Thu, 02 May 2024 18:26:09 +0530