Modern Technology of Synthetic Resins & Their Applications (2nd Revised Edition)

Author: NIIR Board of Consultants & Engineers Format: Paperback ISBN: 9788178330921 Code: NI71 Pages: 592 Price: Rs. 1,575.00 US\$ 42.56 Publisher: Asia Pacific Business Press Inc. Usually ships within 5 days

Modern Technology of Synthetic Resins & Their Applications (Acetal, Acrylonitrile, Alkyd, Amino, Casein, Cashewnut Shell Liquid, Epoxy, Phenolic, Polyamide, Polyurethane, Rubber, Silicon, Polyvinyl Acetate, Shellac, Sucrose, Terpene Resins) (2nd Revised Edition)

Synthetic resin is typically manufactured using a chemical polymerization process. This process then results in the creation of polymers that are more stable and homogeneous than naturally occurring resin. Since they are more stable and are cheaper, various forms of synthetic resin are used in a variety of products such as plastics, paints, varnishes, and textiles. There are various kinds of synthetic resins; acetal resins, amino resins, casein resins, epoxy resins, hydrocarbon resins, polyamide resins, etc. The classic variety is epoxy resin, manufactured through polymerization, used as a thermoset polymer for adhesives and composites. Epoxy resin is two times stronger than concrete, seamless and waterproof. Polyamide resin is another example of synthetic resins. Polyamide resins are products of polymerization of an amino acid or the condensation of a diamine with a dicarboxylic acid. They are used for fibers, bristles, bearings, gears, molded objects, coatings, and adhesives. The term nylon formerly referred specifically to synthetic polyamides as a class. Because of many applications in mechanical engineering, nylons are considered engineering plastics. Resins are valued for their chemical properties and associated uses, such as the production of varnishes, adhesives, lacquers, paints, rubber and pharmaceutical uses. The applications of synthetic resins are seen in some important industries like paint industry, adhesive industry, the printing ink industry, the textile industry, the leather industry, the floor polish, paper, agricultural industry etc. As it can be seen that there is an enormous scope of application of resins hence it is one of the major field to venture.

Synthetic Resins are materials with properties similar to natural plant resins. They are viscous liquids capable of hardening permanently. Chemically they are very different from resinous compounds secreted by plants. Synthetic resins are of several classes.

The growth of the synthetic resins market can be attributed to the high demand from the packaging sector due to favorable properties, including lightweight and ability to act as an excellent barrier, which allows for their usage in applications such as barrier packaging, shrink wraps, and pharmaceutical packaging.

The major contents of the book are properties, manufacturing process, formulae of synthetic resins and applications of synthetic resins, derivatives of resins, use of resins in polymer field, alkyd resin technology, epoxy resins, manufacture of polystyrene based ion-exchange, phenol formaldehyde reactions, polycarbonates resins, polyester coating compositions, synthetic rubbers, modification with synthetic resins,

water-soluble polymers, cross-linking of water-soluble coatings etc. This book also contains the list of manufacturers and dealers of raw materials, list of Chemical Plant, Photographs of Machinery with Suppliers Contact Details, Sample Plant Layout and Process Flow Chart.

The book will be very useful for new entrepreneurs, manufacturers of synthetic resins who can easily extract the relevant formulation and manufacturing process from the book.

Contents

1. ACETAL RESINS

Properties of Formaldehyde and Trioxane Preparation of Polymers New Polymers of Formaldehyde Polymerization of Trioxane Higher Aldehydes Other Aldehydes Properties of Aldehyde Polymers Polymers of Other Aldehydes Processing of Formaldehyde Polymers Uses of Polymers of Formaldehyde

2. ACRYLIC SOLUTION RESINS

Terminology Backbone Monomers Thermoplastic Acrylics Thermosetting Acrylics Processing Industries Aqueous Solution Acrylics Non-Aqueous Dispersions (NAD) Machinery & Equipments

3. ACRYLONITRILE RESINS Manufacture of Acrylonitrile From Acetylene Acrylonitrile : styrene Copolymers Acrylonitrile : butadiene-styrene Uses and Economic Aspects

4. ALKYD RESIN TECHNOLOGY

The Nature of Alkyd Resins Raw Materials Modifiers for Alkyd Resins Formulation of Alkyd Resins Formula Development Calculation of Alkyd Formulations Typical Formulations Manufacture of Alkyd Resins Alcoholysis Acidolysis Fatty Acid Process Estrification Raw Materials Handling Alkyd Manufacturing Plant Corrective Measures During Processing Applications of Alkyd Resins

5. AMINO RESINS Formation of Amino Resins Urea Formaldehyde Resins Melamine Formaldehyde Resins Other Amino Resins Production of Amino Resins Uses of Amino Resins Machinery And Equipments Economics of the Melamine-Formaldehyde Resin/Urea-formaldehyde resin

6. BHILAWAN NUT SHELL LIQUID RESINS

7. CASEIN RESINS Manufacture Properties Casein Adhesves for Bonding Paper Casein Adhesive for a Binding Dissimilar Materials Lime-Free Glue Formulations Methods of Application

8. CASHEWNUT SHELL LIQUID RESINS Chemistry of Cashew nut shell Liquid Utilisation of Cashewnut Shell Liquid Chemically Modified Cardanol Polymer

9. EPOXY RESINS
Introduction
Epoxy Resin Manufacture and Characterization
Curing Agents For Epoxy Resins
Principles in Formulating with Epoxy Resins
Solventless coating for application by heated two componentair less spray equipment
Water Dispersible Epoxy Coatings
Epoxy Baking Enamels
Water-Dispersible Epoxy Resin Coatings for Electrodeposition
Epoxy Aqueuos powder Suspensions (APS)

10. FURAN RESINS

11. HYDROCARBON RESINS Petroleum Resins Terpene Resins Resins from Pure Monomers

12. ION-EXCHANGE RESINS Theory and Mechanism Types of Ion-Exchange Resins Types of Ion-Exchange Resins Properties Applications Manufacture Manufacture of Polystyrene Based Ion-Exchange Resins Polymerisation Alternative Method of Synthesis of anIon-Exchange Resin Process of Manufacture Methods of Analysis Determination of Physcial Properties: Chemical Properties

13. INDENE-COUMARONE RESINS
Raw Material and Source
Method of Preparation
Mechanism of Polymerization
Physical Chemical Properties and Type
Hydrogenated Resins
Applications
Application in Adhesives
Coumarone-indene Resin Adhesives
Health and Hygiene Factors
Test Methods
Economics for Coumarone-indene Resin Plant

14. PHENOLIC RESINS Raw Materials Phenol Formaldehyde Reactions Catalysts Modified Phenolic Resins Baking Phenolics Dispersion Resins Novolak Resins Resols Fillers for Phenolic Moulding Powders Thermal degradation Modified and Thermal - Resistance Resins Oil Soluble Phenolic Resin Heat and Sound Insulation Materials Foundry Resins

15. BISPHENOL-FURFURAL RESIN

16. PARA-TOLUENE SULFONAMIDE RESINS

17. POLYCARBONATES RESINS Properties Methods of Manufacture

18. POLYAMIDE RESINS Properties Methods of Manufacture 19. POLYMIDE RESINS Polymide Adhesives Adhesive and Bonding Technology

20. POLYURETHANE RESINS Raw Materials Hazards of Isocyanates Classification of Polyurethanes

21. POLYVINYL ALCOHOL RESINS Introduction Chemical Nature Physical Properties Modifiers Commercial uses : Compounding and Formulating Commercial uses : Processing Aids Formulations Preparation Process Adhesives Economics for Polyvinyl alcohol

22. POLYVINYL ACETATE SOLID RESINS Manufacture Vinyl Acetate Copolymers Polyvinyl Acetate Emulsions Manufacture Laboratory Preparation of Polyvinyl Acetate Commercial Preparation Special Formulation Acetate Adhesive As Adhesives In the Building Industry Economics for Polyvinyl acetate

23. RUBBER RESINS Introduction Natural Rubber Synthetic Rubbers Chlorinated Rubber Resins Cyclized Rubber Resins **Application And Formulations** High Styrene-Butadiene Rubber Resins Styrene-Butadiene Rubber Adhesives **Chlorinated Biphenyls Chlorinated Paraffins** Synthetic Rubber Resin Latexes Nitrile rubber Adhesives Butyl Rubber And Polysobutylene Adhesives Processing for Butyl Polymers Carboxylic Resin Polymers in Adhesives Carboxylic elastoners in PSA Carboxylic Functional Neoprenes as Contace Adhesives

24. SILICONE RESINS

Preparation of Silocones Silicone Resins Preparation and Formulation of Silicone-Resin based Coatings Application Guides Other Silicone Resin Application Other Silicones for Surface Coatings

25. SHELLAC RESINS Commercial Forms of Lac Chemical Composition Modification with Synthetic Resins

26. SUCROSE RESINS Transesterification Sucrose modified resins Sucrose acetate isobutyrate (SAIB)

27. ROSIN & ROSIN DERIVATIVES Composition, Reaction and Derivatives, Isomerization Maleation Oxidation, Photosensitized Oxidation Hydrogenation Hydrogenless Hydrogenation Hydrocaraking of Rosin Phenolic Modification Salt Formation Hydrogenolysis Polyesterification Preparations, Typical Uses Chemical and Physical Properties of Amine D Acetate Decarboxylation Hydroxymethylation and Hydroxylation Poly-Oxyalkylation Oxonation

28. TERPENE RESINS Hot Melt Adhesives (HMA) and coatings Terpene-phenolic Resin (TPR)

29. WATER-SOLUBLE POLYMERS Classification Applications of Starches The textile industry Adhesive Applications Liquid Adhesives Miscellaneous Uses Properties of Cellulose Ethers Emulsion Polymerization

30. ALKYL AND HYDROXYALKYL CELLULOSE Cellulosic Ethers, General Information Manufacture Powder and Film properties Physical and chemiclal properties Commercial Uses : Compounding and Formulating Commercial Uses

31. WATER-REDUCIBLE RESINS Water Soluble Polymers Cross-Linking of Water-Soluble Coatings Additives For Coatings, Pigments Formulation of water-soluble coatings Trouble Shooting with water-soluble polymers

32. PHOTOGRAPHS OF MACHINERY WITH SUPPLIERS

CONTACT DETAILS Reactor Condenser Thermic Fluid Heating System Octagonal Blender Industrial Storage Vessels **Ribbon Blender** Filter Press Filter Tank Moulding Machine Ball Mill Blender Drver Roller Mill Conveyor Dryer **Resin Plant** Blender Machine Air Compressor Heat Exchanger Storage Tank

33. SAMPLE PLANT LAYOUT AND PROCESS FLOW CHART
Alkyd Resin Manufacturing
Resin Production Equipment
Process Flow Chart for Toner Resins
Polyester Resin Production
Factory Layout for production of Alkyd Resin Production Plant

About NIIR

NIR 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 varies 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.

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

Sat, 27 Jul 2024 08:46:03 +0530