

The Complete Technology Book on Synthetic Resins with Formulae & Processes

Author: NIIR Board of Consultants & Engineers

Format: Paperback

ISBN: 818662399X

Code: NI151

Pages: 512

Price: Rs. 1,150.00 US\$ 29.95

Publisher: National Institute of Industrial Research

Usually ships within **5** days

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; silicones resins, polyvinyl pyrrolidone, gum arabic, epoxy resins, guar gum, carrageenan, carboxymethyl cellulose, etc. Resins are polymeric compound which are available in nature and are also manufactured by synthetic routes. Some resins are also manufactured by partial modification of natural precursor polymer by chemical. Silicones are unique among the commercially important polymers both in chemistry and in variety of industrial applications. Silicones can be applied as high temperature insulating varnishes, impregnates to be used with glass, asbestos, mica products and encapsulating agents for electrical components. Water borne dispersions or emulsions, for example emulsions of vinyl or acrylic copolymers are popular in decorative coatings. The applications of synthetic resins are seen in some important industries like paint industry, adhesive industry, the textile industry, paper, paint, agricultural industry, petroleum 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.

Some of the fundamentals of the book are electrodepositable pigmented coating compositions based on alkyd resins, phosphorus containing allyl resins, vapour permeation cure technology, characterization of water soluble anodic electrodepositive pigmented coating compositions, protection of concrete substrates, zinc rich coatings, electro deposition primers, developments in thermosetting powder coatings, application of powder coatings, polyethylene glycol, petroleum recovery and processing, industries using polyethylene glycols, silicones resins, preparation & formulation of silicone resin based coatings, pigments and dyes etc. Synthetic Resins are used by lot of industries. Yet, little emphasis has been placed on the comparative value on functionality of polymeric material as a class. These resins have been classified in separate categories, usually in terms of their Chemistry, sources or end uses. The present book contains formulae, processes and other valuable details for various synthetic resins. This is very useful book for those concerned with development, consultants, research scholars, new entrepreneurs existing units, institutional libraries etc.

Contents

1. PHOSPHORUS CONTAINING ALLYL RESINS

Properties of Monomers

Polymerization

Applications

2. ELECTRODEPOSITABLE PIGMENTED COATING COMPOSITIONS BASED ON ALKYD RESINS

Introduction

Experimental

Materials

Synthesis of water soluble alkyd resin from phthalic anhydride and maleic anhydride (A1).

Synthesis of water soluble alkyd resin from phthalic anhydride and trimellitic anhydride (A2).

Synthesis of water soluble alkyd resin from phthalic anhydride and maleopimaric acid (A3).

Synthesis of water soluble alkyd resin from maleopimaric acid (A4).

Synthesis of water soluble methylated melamine formaldehyde resin.

Preparation of water soluble anodic electrodepositive pigmented coating compositions.

Characterisation of water soluble alkyd resins

Characterisation of water soluble anodic electrodepositive pigmented coating compositions.

Optimisation of anodic electrodepositive parameters

Testing and evaluation of anodic electrodepositive pigmented coating compositions

Results and Discussions

Solvent (MTO) Resistance

Protection Against Corrosion

3. VAPOUR PERMEATION CURE TECHNOLOGY

Introduction

Vapour Permeation Cure (VPC)

Primary Advantages of VPC Coating

Disadvantages

Limitations

Vapour Injection Cure (VIC) Process

Chemical Composition

Reaction and Mechanism

Advantages of VIC

Conclusion

4. PROTECTION OF CONCRETE SUBSTRATES

Differences Between Concrete and Metallic Substrates

Constructions Influence

Coatings Used on Concrete

Organic coatings Thin film

Modified Epoxies

Furans

Chlorinated Rubbers

Waterborne Coatings

Vinyl Esters

Other Coatings

Organic Coatings Thick Film

Elastomeric Coatings

Polyurethane Coatings

Synthetic Rubber (Elastomers)

Resin Rich System

Polymer Concretes

Plastic Liners
Brick or Tile and Mortar Systems
Machinery Setting Grouts
Inorganic Coatings
New Versus Aged or Deteriorated Substrates
Quality Assurance
Conclusion

5. ZINC RICH COATINGS

Inhibitive Primers
Organic Zinc Rich Coatings
Inorganic Zinc Rich Coatings
Surface Preparation
White Metal Blasting
Galvanising
Galvanising and Zinc Rich Coating Comparison
Beach Front Exposure
Tidal Exposure
5% Salt Spray Test
Inorganic Zinc Rich Coating Advantages and Limitations
Application of Inorganic Zinc Rich Coatings
Cost Aspects

6. ELECTRO DEPOSITION PRIMERS

Electrodeposition Primers
Mechanism of Electrodeposition
Electro osmosis
Advantages of Electrodeposition
Types of Electrodeposition Primers
Shift to Cathodic E.D. Primer
Cathodic Electrodeposition Paint
Comparison of AED and CED
Properties of Dry Film
Latest Development in C.E.D.
Comparative Features of Different Types of CED
Plant Design and Process Control
Trends in Top Coats
Upgradation of Appearance & Performance of Top Coats
Solid Colours
Metallic Colours
Developments in Top Coat Application
Developments in Thermosetting Powder Coatings
Powder Manufacture
Types of Powder
Powder Coatings Method of Application
Electrostatic Spray Corona Charging
Faraday Cage
Back Ionization
Electrostatic Spray Tribo Charging
Advantages of Powder Coatings
Dis Advantages of Powder
Economic Advantages of Powder Coatings
Application of Powder Coatings

General Metal Coatings
Industrial Machinery
Conclusion

7. WATERBORNE DISPERSIONS

Formulating Principles
Pigments
Additives
Binders
Acrylics/Vinyls/Vinyl Acrylic Emulsions
Polyurethane Dispersions
Cross Linking
Epoxy Dispersions
Miscellaneous Systems
Conclusion

8. ALGINATE

Chemical Structure
Chemical Derivatives
Manufacture
Physical Properties
Powdered Alginates
Solution Properties
Rheological Properties
Commercial Uses
Food Applications
Industrial Applications
Formulations
Stabilizing Frozen Foods
Fruit pie Filling
Frozen Gel
Frozen Fruit
Cream Sauce
Barbecue Sauce
Frozen Shortcake Berry Filling
Tomato Sauce (Pizza and Spaghetti)
Macaroni and Cheese
Chopsuey
Food Gels
Dessert Gel
Cold Water Gel
Cold Milk Gel
Instant Chiffon Pie Filling
Instant Chesse Cake Mix
Instant Limitation Bakery Jelly
Banana Gel Base
Meringue Powder with Dried Egg Whites
Dessert Souffles
Vanilla Souffle
Chocolate Souffle
Lemon Souffle
Dressings
Fabricated fruit

Pie fillings
Cooked Fillings
Cold mix Fillings
Industrial Applications
Corrugating Adhesives
Single Starch System
Two Starch System
Fiber Reactive dyes
Pad Dyeing
Laboratory Techniques
Viscosity Measurement
Moisture Determination
Powder Color Determination
Alginates in Mixtures (Detection)
Alginates in Mixtures (Determination)
Spectrophotometric

9. CARBOXYMETHYL CELLULOSE

Chemical Nature
Physical Properties
Equilibrium Moisture Content
Molecular Weights
Solubility
Film Properties
Manufacture
Biological Properties
Toxicological Properties
Six month Oral Toxicity
One year Studies
Chronic Oral Toxicity
Reproduction
Gastrointestinal Absorption
Clinical Study
Skin Irritation and Sensitization
Getting Information
Rheology
Storage and Handling
Packaging
In Plant Handling
Bulk Handling
Bag Handling and Storage
Shipping
Applications
Detergents
Petroleum
Paper
Textiles
BOD and Desizing Wastes
Coatings
Cosmetics and Pharmaceuticals
Miscellaneous Applications
Specialties
Future Developments

World Production

10. CARRAGEENAN

Chemical Nature

Structure

Molecular Weight

Reactivities

Physical Properties

Appearance

Particle Size

Density

Solubilities

Manufacture

Biological/Toxicological Properties

Gastrointestinal Ulceration

Teratogenicity

Carcinogenicity

Rheological Properties

Gelation

Milk Gels

Additives/Extenders

Handling

Applications

By Result

By End Product

By Industry

By Process

Application Procedures

Dispersion

Stability

Specialties

Future Developments

Commercial Uses: Compounding and Formulating

Milk Applications

Uses in Dry Mixes

Uses in Manufactured Products

Water Applications

Uses in Dry Mixes

Uses in Manufactured Products

Nonfood Applications

Pharmaceuticals and Toilet Goods

Other Applications

Commercial Uses: Processing Aids

Beverage Clarification

Abrasive Suspensions

Ceramic Glazes and Core Washes

Industries Using Carrageenans

Food

Dairy

Dairy Substitutes

Packaged Desserts

Other Food Uses

Pharmaceuticals and Toilet Goods

Metal Fabrication
Ceramics
Coatings
Agriculture
Household Products
Formulations
Chocolate Milk
Canned Water Dessert Gel
Air Treatment Gel
Toothpaste
Milk Puddings
Creamy Type (Cold Set)
Cooked Custard Type (Dessert and pie filling)
Cooked Custard or Flan
Antacid Gel
Laboratory Techniques
Water Viscosity Measurement
Water Gel Strength Measurement
Milk Gel Strength measurement

11. GUAR GUM

Manufacture
Seed Structure
Purification
Grades
Chemical and Physical Properties
Structure
Solubility in Water
Rheology
Viscosity
Shear Response
Handling
Dry Storage
Solution Preparation
Applications
Oil and Gas
Explosives
Textile
Food
Ice Cream
Canned Pet Food
Cheese
Sauces and Salad Dressings
Paper
Mining
Commercial Applications: Compounding and Formulating
Food
Explosives
Commercial Uses: Processing Aids
Oil and Gas
Textile
Carpets
Paper

Kraft Papers
Kraft Liner board
Recycled Liner board
Corrugating Medium
Boxboard
Offset News Stock
White Papers
Mining
Industries Using Guar Gum
Oil and Gas
Explosives
Food
Paper
Textile
Mining
Formulations

12. GUM ARABIC

Chemical Nature
Physical Properties
Manufacture
Biological/Toxicological Properties
Rheological Properties
Additives/ Extenders
Additives
Extenders
Handling
Applications
Emulsification
Colloid Stabilization
Encapsulation
Suspension
Application Procedures
Compatibility
Commercial Uses
Food Applications
Confectioneries
Dairy Products
Bakery Products
Flavor Fixation
Flavor Emulsification
Beverages
Pharmaceuticals
Suspending Agent
Demulcent Agent
Emulsification
Antiseptic Preparations
Miscellaneous Applications
Medicines
Cosmetics
Adhesives
Paints
Inks

Record Ink
Soluble Inks
Watercolor Inks
Quick Drying Inks
Fabric and Laundry Marking Inks
Pigmented Inks
Emulsion or Typographic Inks
Hectographic Inks
Electrically Conductive Inks
Lithography
Textiles
Miscellaneous Uses
Industries Using Gum Arabic
Food Industry
Pharmaceutical Industry
Other Industries
Formulations
Confectioneries
Dietetic or Sugarless Candies
Marshmallows
Food Emulsions
Pickle Oil Emulsion
Pickle Juice
Beverages
Stabilized Fruit Drink
Dry Mix Imitation Orange Drink
Beverage Stabilizers
Nut Coating
Inks
Gloss Finish Inks
Wood Grain Inks
Laboratory Techniques
30% Viscosity Method
Insoluble Residue
Sediment and Color
Peroxidase Content

13. HYDROXY ETHYL CELLULOSE

Chemical Nature
Physical Properties
Solubility in water
Solubility in Organic Solvents
Dissolving Methods
Viscosity Properties
Compatibilities
Interactions
Film Formation
Manufacture
Biological/Toxicological Properties
Rheological Properties of Solutions
Additives/Extenders
Handling
Applications

Application Procedures
Specialties
Future Developments
Commercial Uses: Compounding and Formulating
Protective Colloid in Latex
Thickener for Latex Compositions
Latex Paints
Color Coats for Paper
Textile Binders and Adhesives
Building Specialties
Cosmetics and Pharmaceuticals
Paper Sizes and Coatings
Carpet and Textile Dye Pastes
Special Applications
Commercial Uses: Processing Aids
Crude Oil Drilling and Recovery
Electroplating and Electrowinning
Miscellaneous Binders
Other Specialty Uses
Industries Using Hydroxyethylcellulose
Adhesives
Agricultural Products
Building Products
Cosmetics
Oil and Gas Extraction
Paints and Coatings
Paper and Allied Products
Synthetic Resins
Textile Mill Products
Formulations
`Copolymer Latex
Latex Interior Flat Wall Paint
Textile Printing
Oil Well Workover Fluid
Roll on Antiperspirant
Liquid Shampoo

14. HYDROXY PROPYL CELLULOSE

Chemical Nature
Stability
Chemical Stability
Biological Stability
Insolubilization
Physical Properties
Moisture Content
Solutions
Rheology
Organic Solutions
Hot Melts and Waxes

Compatibility
Film Properties

Thermoplasticity
Manufacture
Toxicological Properties
Additives
Preservatives
Defoamers
Plasticizers
Handling
Applications
Application Procedures
Water Temperature
Compatibility with Salts
Molding Powder Preparation
Specialties
Commercial Uses: Compounding and Formulating
Commercial Uses: Processing Aids
Industries Using Hydroxypropyl Cellulose
Formulations
Cosmetics
Antiperspirant (Roll On)
Hair Grooming Aid
Shampoo (Gel)
Paint Removers
Nonflammable Solvent Type Remover
Acid Type Remover
Pharmaceuticals
Thermoplastics
Injection Molding Formulation (Unfilled)
Laboratory Techniques

15. POLYETHYLENE GLYCOL

Chemical Nature
Physical Properties
Viscosity
Solubility in Water
Solubility in Organic Solvents
Solvency and Compatibility
Hygroscopicity
Surface Tension
Volatility
Thermal Stability
Biological/Toxicological Properties
Manufacture
Handling
Applications
Functions
End Products
Industries
Processes
Application Procedures
Additives/Extenders
Specialties
Future Developments

Commercial Uses: Compounding and Formulating

Chemical Intermediates

Adhesives

Agricultural Formulations

Cellophane Film Humectants

Cosmetics and Toiletries

Detergents and Cleaners

Inks

Paints and Coatings

Pharmaceutical Products

Rubber Compounds

Miscellaneous Products

Cork Products

Food Products

Lubricants and Hydraulic Fluids

Paper Products

Photographic Developers

Sponges

Wood swelling agent

Commercial Uses: for Processing Aids

Ceramics

Dialysis Operations

Electroplating

Heat Transfer Baths

Leather Treatment

Metal Working Operations

Paper Products

Petroleum Recovery and Processing

Plastic Compounding

Rubber Products

Textile Products

Wood Products

Industries Using Polyethylene Glycols

Adhesives

Agricultural Products

Ceramics Products

Chemical Specialties

Cosmetics and Toiletries

Electronic and Electrowinning

Food Products

Inks and Printing

Leather Processing

Lubricants and Hydraulic Fluids

Medical Sundries

Metal Fabricating

Packaging Materials

Paints and Coatings

Paper Products

Petroleum Recovery and Processing

Pharmaceuticals

Photographic Products

Plastics Products

Rubber and Elastomers

Textile Products
Wood Processing
Formulations
Fatty Acid Esters
Water Dispersible Alkyd Resin for Paints
Suppository Bases
Ointment Bases
Cosmetic Cream
Hand Lotion
Brushless Shaving Cream
Cream Rouge (Vanishing)
Perfume Stick
Clay Starch Paper Coating
Metal Working Lubricant
Ball point Pen Ink
Laboratory Techniques
Identification of PEGs
Determination of PEGs in Other Materials

16. ALGINATE POLY ETHYLENE OXIDE

Chemical Nature
Narrow Molecular Weight Distribution Grades
Hydrogels
Thermoplastic Compound
Hydrodynamic Drag Reduction Slurry
Oxidative Degradation
Association Complexes
Physical Properties
Bulk Properties
Manufacture
Biological/Toxicological Properties
Toxicological Studies
Biodegradability
Rheological properties
Viscosity
Additives/Extenders
Applications
Application procedures
Boiling Water Dispersion
Nonsolvent Dispersion
Commercial Uses: Compounding and Formulating
Adhesives
Water Soluble Paper Adhesives
Adhesives from Association Complexes
Industrial Supplies
Thickened Cleaning Solutions
Construction Products
Paving Composition
Water Soluble Purge Dam
Paints and Paint Removers
Latex Paints
Spatter Finish
Thickener for Paint and Varnish Remover

Pharmaceuticals
Dispersant for Calamine Lotion
Rubbing Alcohol
Printing Products
Microencapsulated Inks

Lithographic Press Dampening Fluid
Soap, Detergents, and Personal Care Products
Detergents
Toothpastes
Denture Fixative
Shaving Stick
Ophthalmic Solution
Absorbent Pads
Water Soluble Films
Seed Tape
Water Soluble Packaging
Commercial Uses: Processing Aids
Binder
Ceramics
Battery Electrodes
Fluorescent Lamps
Soil Stabilization
Other Binder Applications
Coatings and Sizes
Tablet Coatings
Glass Fiber Size
Dispersant
Vinyl Polymerization
Glass Fiber Reinforced Concrete
Flocculation
Clays
Coal
Silica
Filer Retention Drainage Aid (Paper Making)
Hydrodynamic Drag Reduction
Fire fighting Additive
Fluid jet Cutting
Additive to Prevent Sewer Surcharges
Other Drag Reduction Applications
Thermoplastics Manufacture
Textile Antistat
Fugitive Textile Weft
Thickening / Rheology Control
Antimist Additive
Drift Control Additive
Oil Recovery Fluids
Water Retention
Asbestos Cement Extrusion Aid
Soil Amendment
Industries Using Poly (Ethylene Oxide)
Formulations
Aluminum and Metal Cleaner

- Calamine Lotion
- Denture Fixative, Powder
- Detergent Bars
- Detergent Liquid
- Lithographic Press Dampening Fluid
- Microencapsulation
- Paint and Varnish Remover
- Thickened Acetic Acid
- Thickened Hydrochloric Acid (Muriatic Acid)
- Thickened Sulfuric Acid
- Rubber Lubricant (for Mounting of Tires)
- Toothpastes

17. POLYVINYLPIRROLIDONE

- General Information
- Chemical Nature
- Physical Properties
- Manufacture
- Rheological Properties
- Intrinsic Viscosity
- Toxicological Properties
- General
- Acute Toxicology
- National Cancer Institute
- Subacute and Chronic
- PVP Films
- Compatibilities
- Future Developments
- Applications of PVP
- Pharmacy
- Medicine
- Beverages
- Cosmetics and Toiletries
- Textiles
- Paper
- Adhesives
- Detergents and Soaps
- Polymers and Polymerization
- Agricultural
- Photography and Lithography

18. SILICONES RESINS

- Chlorosilanes
- Commercial Production of Monomeric Intermediates
- Silicone Fluids
- Manufacture
- Properties and Uses
- Thermal Stability
- Rheological Characteristics
- Surface Activity
- Lubricating Properties
- Electrical Properties
- Other Characteristics

Identification
Silicone Elastomers
Manufacture of Base Polymers
Fillers
Processing
Vulcanization
Properties and Uses
High and Low Temperature Applications
Electrical Applications
Molding and Mold Release Applications
Thermal Insulation and Ablative Applications
Construction Products
Medical Applications
Convenience Uses and Miscellaneous Applications
Silicone Resins
Manufacture
Cure
Properties and Uses
Greases and Compounds
Surfactants
Primers and Adhesion Promoters
Preparation & Formulation of Silicone Resin Based Coatings
Cure Catalyst Driers
Pigments and Dyes
Thinners
Formulations
Application Guides
Surface Preparation
Priming
Applying the Coating
Curing
Surfactants and Specialties
Methods of Manufacture
Properties
Emulsions

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

Tue, 25 Jun 2024 03:52:15 +0530