

The Complete Book on Resins (Alkyd, Amino, Phenolic, Polyurethane, Epoxy, Silicone, Acrylic), Paints, Varnishes, Pigments & Additives (Surface Coating Products with Formulae)(3rd Revised Edition)

Author: NIIR Board of Consultants & Engineers

Format: Paperback

ISBN: 9788178331652

Code: NI64

Pages: 632

Price: Rs. 1,995.00 **US\$** 150.00

Publisher: Asia Pacific Business Press Inc.

Usually ships within **5** days

Surface coating is the application of decorative or protective materials in liquid or powder form to substrates. These coatings normally include general solvent type paints, varnishes, lacquers, and water thinned paints. Surface coating involves different types of products for example paints, varnishes, resins, polyesters, pigments etc. Alkyd resin is complex oil modified polyester that serves as the film coating agent in some paints and clear coatings. Varnish is one of the important parts of surface coating industry. They are used as clear, transparent coatings or as vehicles for a wide variety of pigmented, opaque coatings for architectural and industrial purposes.

India's strong economic growth has propelled the paint industry to double digit growth over the past few years and has made it Asia Pacific fastest growing paint market. The spurt in the economic growth over the past few years has caused a tremendous increase in the size of the industry. The field of surface coatings is now so extensive, and is developing rapidly.

This handbook covers all aspects of coating technology including composition, preparation, application, manufacturing process and photographs of plant & machinery with supplier's contact details. The major contents of the book are oleoresinous media, varnishes: composition, manufacture & use, alkyd resin technology, manufacture of alkyd resins, polyesters, amino resins, phenolic resins, polyurethane resins, epoxy resins, silicone resins, acrylic solution resins, emulsion polymerization theory, emulsion polymers, water reducible resins, water soluble polymers, solvents, inorganic pigments, titanium dioxide pigments, organic pigments, paint driers and architectural paints etc.

It will be a standard reference book for professionals, entrepreneurs, food technologists, those studying and researching in this important area and others interested in the field of resins, paints, varnishes, pigments & additive industry.

Contents

Contents

1. THE PAST, PRESENT AND FUTURE OF THE SURFACE

COATINGS INDUSTRY

2. OLEORESINOUS MEDIA

Industry Terminology

Raw Materials Used in Oleoresinous Production

Finished Products Based on Oleoresinous Media

Manufacturing Equipment

Process Control Testing

3. VARNISHES: COMPOSITION, MANUFACTURE AND USE

Composition

Oils Used in varnishes

Gasproofing

Water and Alkali Resistance

Manufacture of Oleoresinous Varnishes

Varnishes Vs. Alkyds

4. ALKYD RESIN TECHNOLOGY

Raw Materials

Formulation of Alkyd Resins

Calculation of Alkyd Formulations

Calculation of Raw Materials for an Alkyd Prepared by the Monoglyceride Process

Typical Formulations (all quantities by mass)

5. MANUFACTURE OF ALKYD RESINS

Alcoholysis

Catalysts

Control of Alcoholysis

Fatty Acid Process

Comparison of Fusion and Azeotrope Processes

Raw Materials Handling

Alkyd Manufacturing Plant

6. POLYESTERS

Main Components of Unsaturated Polyesters

Functions of Initiators, Accelerators, Inhibitors

Effect of Structure on Properties of Cured Products

Polyester Coating Compositions

7. APPLICATIONS OF ALKYD RESINS

Very Long Oil Alkyds: 75 per cent and above

Long Oil Alkyds: 60 to 75 per cent

8. AMINO RESINS

Formation of Amino Resins

Urea Formaldehyde Resins

Melamine Formaldehyde Resins

Uses of Amino Resins

Water Based Coatings

9. PHENOLIC RESINS

Phenol-Formaldehyde Reactions

Oil Soluble 100 per cent Phenolic Resins

Baking Phenolics

10. POLYURETHANE RESINS

Toluene Diisocyanate (TDI)

4, 4 Diphenylmethane Diisocyanate (MDI)

Other Diisocyanates Used in Coating Systems

Hydroxy Component

Hazards of Isocyanates
Classification of Polyurethanes
Moisture-cured Urethanes
Blocked Isocyanate Systems
Two-component Catalyst-cure Polyurethanes
11. EPOXY RESINS
Epoxide Group Content (ECG)
Curing Agents for Epoxy Resins
Principles in Formulating with Epoxy Resins
Solvent-based Coatings
Single-pack Thermoplastic Epoxy Systems
 
12. WATER DISPERSIBLE EPOXY COATINGS
Epoxy/Polyamide Emulsions
Water-dispersible Epoxy Resin Coatings for Electrodeposition
13. SILICONE RESINS
Preparation of Silicones
Polymerization
Methyl-and Phenyl-content
Blending Resins¹⁷⁸
Preparation and Formulation of Silicone-Resin based Coatings
Application Guides
Applying the Coating
14. ACRYLIC SOLUTION RESINS
Backbone Monomers
Addition Polymerization
Copolymerization
Thermoplastic Acrylics
Thermosetting Acrylics
Acid Copolymers
15. EMULSION POLYMERIZATION THEORY
Polymerization in Emulsion Systems
16. EMULSION POLYMERS: MANUFACTURE AND TESTING
Process Variables
Delayed Addition Process
Alternative Processes
Surfactant Addition Techniques
Agitation
Surfactant Addition Techniques
Emulsion Testing
Ultracentrifugation
17. APPLICATIONS OF EMULSION POLYMERS
Architectural Applications
Examples of Decorative Paints
Industrial Applications
Adhesives Industry
Pressure Sensitive Uses
 
18. WATER-REDUCIBLE RESINS
Water-soluble Polymers
Acrylic-modified Water-soluble Alkyds
Silicone-modified Alkyds and Polyesters
Keeping the Epoxide Ring Available for Subsequent Cross-linking

Thermoplastic Polymers
Thermosetting Polymers
Melamine Formaldehydes
Other Water-soluble Polymers
Variation of Amine Levels
Drying Properties
Coupling Efficiency
Driers for Air Dry and Force Dry Systems
Cross-linking of Water-soluble Coatings
Trouble Shooting with Water-Soluble Polymers
19. WATER-SOLUBLE POLYMERS
Cellulose and its Derivatives
Flow Characteristics of Water Soluble Polymer Solutions
Thixotropy
Rheology
20. SOLVENTS
Evaporation Rate
Liquid/Liquid Boiling Equilibrium
Applications Technology
Evaporation from Polymer Film
Chemical Solvents
Nitrocellulose and Other Lacquers
Latex Paints
Solvent Control
Gas Chromatography
21. INORGANIC PIGMENTS
The Functions of a Pigment
Properties of Pigments
The Classification of Pigments
Properties of Inorganic Pigments
Lead Chromate
Chrome Oxide Pigments
Zinc Oxide
Zinc Sulfide Lithopone
Calcium Plumbate
Mixed Phase Pigments
22. TITANIUM DIOXIDE PIGMENTS
The Chloride Process
Applications of Titanium Pigments
Dispersion of Titanium Pigments
Gloss Development
23. ORGANIC PIGMENTS
Colour and Chemical Constitution
Azo-Condensation Pigments
Pigment Conditioning
Dyestuffs
Colour Index Classification
24. EXTENDER PIGMENTS
Particle Size and Shape
Particle Size Distribution
Types of Extender Pigment
China Clay (Kaolin)
25. PAINT DRIERS

Drier Recommendations
Stability of Drying Performance on Storage
Driers for Use in Water based Systems
26. PAINT ADDITIVES
Wetting and Dispersing Agents
Aluminium Soaps
Hydrogenated Castor Oil (Triglyceride of 12-hydroxy Stearic Acid)
Anti-skinning Agents
Anti-flood and Anti-float Additives
Recognizing Flooding and Floating
Identification of Mildew
Latex Paint Additives
Stabilizing Surfactants (Non-ionics)
Latex Thickening Agents
Coalescing Aids
27. MANUFACTURE OF PAINTS
28. ARCHITECTURAL PAINTS
Formulating Exterior Paints for Wood
Interior Paints for Plaster and Wallboard
Exterior Emulsion Paints for Masonry
Exterior Solution Type Paints for Masonry
Interior and Exterior Enamels
Enamels for Wood and Concrete Floors
29. INSIDE IMAGES OF A PAINT FACTORY
30. PHOTOGRAPHS OF PLANT & MACHINERY WITH
SUPPLIER'S CONTACT DETAILS

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.

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

