

The Complete Book on Adhesives, Glues & Resins Technology (with Process & Formulations) 2nd Revised Edition

Author: NPCS Board of Consultants & Engineers

Format: paperback

Code: NI185

Pages: 616

Price: Rs 1675 | US\$ 150

Publisher: NIIR PROJECT CONSULTANCY SERVICES

Shipping: 5 days

About the Book

An adhesive is a material used for holding two surfaces together. In the service condition that way adhesives can be called as “Social” as they unite individual parts creating a whole. A useful way to classify adhesives is by the way they react chemically after they have been applied to the surfaces to be joined. There is a huge range of adhesives, and one appropriate for the materials being joined must be chosen. Gums and resins are polymeric compounds and manufactured by synthetic routes. Gums and resins largely used in water or other solvent soluble form for providing special properties to some formulations. More than 95% of total adhesive used worldwide are based on synthetic resins. Gums and resins have wide industrial applications. They are used in manufacture of lacquers, printing inks, varnishes, paints, textiles, cosmetics, food and other industries.

Increase in disposable income levels, rising GDP and booming retail markets are propelling growth in packaging and flexible packaging industry. Growth of disposable products is expected to increase, which leads to increase in consumption of adhesives in packaging industry. The global value of adhesive resins market is estimated to be \$11,339.66 million and is projected to grow at a CAGR of about 4.88% in coming years. Rapid urbanization coupled with growing infrastructure and real estate construction projects is projected to further fuel demand for adhesives in India.

This handbook covers photographs of plant & machinery with supplier's contact details and manufacturing aspects of various adhesives, glues & resins. The major contents of the book are glues of animal origin, fish glues, animal glues, casein glues & adhesives, blood albumen glues, amino resin adhesives, cyanoacrylate adhesives, epoxy resin adhesives, phenolic resin adhesives, polychloroprene resin adhesives, polysulfide sealants & adhesives, resorcinolic adhesives, furan resin adhesives, lignin adhesives, polyamide adhesives, rosin adhesive, tannin adhesives, terpene based adhesives, starch adhesives, acrylic adhesives and sealants, pressure sensitive adhesives, hot melt adhesives, alkyd resins, acrylic modified alkyd resins, alkyd –amino combinations based on neem oil, amino resins, carbohydrate modified phenol- formaldehyde resins, epoxy resins etc.

It will be a standard reference book for professionals, entrepreneurs, those studying and researching in this important area and others interested in the field of adhesives, glues & resins technology.

Contents

ADHESIVES

1. Glues of Animal Origin Properties

Methods of Manufacture
Commercial Grades and Specifications
Methods of Analysis
Sampling
Procedure
Identification
Physical Measurements
Determination of Other Constituents
2. Fish Glues
Introduction
Manufacturing Process
Properties
Applications & Formulations
Rubber-to-Steel
Strawboard-to-Steel
Rubber-or Cork-to-Plywood
Paper-to-Steel
Straight Line Gluing
3. Animal Glues
Introduction
Chemical Composition
Manufacture of Animal Glues
Properties
Liquid Animal Glues
Formulation & Applications
Methods of Application
4. Casein Glues and Adhesives
Introduction
Properties
Casein Blend Glues
Lime free Casein Adhesives
Applications
Casein Adhesives for Bonding Paper
Casein Adhesive for Binding Dissimilar Materials
5. Blood Albumen Glues
Introduction
Solubility Categories
Properties
Blood-Soybean Flour Combinations
Mold Resistance
Application
6. Amino Resin Adhesives
Introduction
Manufacturing Technology
Urea Adhesive for Plywood
Urea Adhesive for Particle Board
Spray Dried Melamine-formaldehyde Resins
Foundry Resin
Aniline-Formaldehyde Resin
Ø Represents benzene ring
Sulfonamide-Formaldehyde Resins



Applications

Adhesives for Hardwood Plywood

Sand Core Binder

Water Proof Corrugated Board

Compounding and Formulation

7. Cyanoacrylate Adhesives

Introduction

Bonding with Cyanoacrylates

Adhesive Properties

Applications

8. Epoxy Resin Adhesives

Introduction

Chemistry

Epoxy Novolac Resins

Flexible Epoxy Resins

Epoxidized Olefins

Speciality Epoxy Resins & Derivatives

Epoxy Esters of Rosin

Epoxy Esters of Styrenated Rosin

Epoxy Esters of Disproportionated Rosin

Epoxy Novolac Esters

Epoxy Ester of Maleopimaric Acid

Compounding

Curing Agents

Diluents

Modifiers

Flexibilizers

Fillers

Accelerators

Speciality Additives

Manufacture of Adhesives

9. Phenolic Resin Adhesives

Introduction

Resole resin

Novalac Resins

Manufacture

Applications and Formulations

Contact Adhesives

Adhesive Compounding

Nitrile/Phenolic Contact Adhesives

Structural Adhesives

Vinyl/Phenolic

Epoxy/Phenolic

Hot Melt Adhesives

Hot Melt Vinyl Film to Wood Laminating Adhesives

Pressure Sensitive Adhesives (PSA)

10. Polychloroprene Resin Adhesives

Introduction

Types of Polychloroprene

Applications and Formulations

Applications

11. Polyester Resin Adhesives

Introduction

Linear Polycarbonates

Polymerized Oils

Alkyd Resins

Unsaturated Polyester Adhesives

Adhesives for Flexible Printed Circuit

Allyl Ester Adhesives

12. Polyethyleneimine in Adhesives

Introduction

Applications

General Adhesives

Tie Coat Adhesives

13. Polysulfide Sealants and Adhesives

Introduction

Polysulfide Sealants

Chemistry

Compounding

Curing Agent

Retarder

Reinforcement

Adhesion Additives

Primers

Improved Heat Resistance

Applications

Adhesives from Polysulfide Liquid Polymer

Epoxy Resin Reactions

14. Resorcinolic Adhesives

Introduction

Resorcinol-Phenol Formaldehyde Resins

Modified Resorcinol Resins

Aspects of Adhesion Mechanism

Formulation of Glue Mixtures

Laminating

15. Ethylene Copolymer Hot Melt Adhesives

Introduction

Crystallinity

Compatibility

Pressure Sensitive Tack

Hot Melt Adhesive Formulating

Book Binding Adhesives

Carton and Case Sealing Adhesives

Carpet Application

Shoe Adhesives

Pressure Sensitive Adhesives (PSA)

Furniture Adhesives

16. Furan Resin Adhesives

Introduction

17. Isocyanate Adhesives

Introduction

Advantages of Isocyanate Adhesives

Disadvantages of Isocyanates

Applications

Types and uses of Isocyanate based Adhesive System

18. Lignin Adhesives

Introduction

Formulations

19. Polyamide Adhesives

Introduction

Class I: Thermoset Adhesives Containing Liquid

Polyamide Curing Adhesives

Class II: Nylon-Epoxy Resins

Class III: Thermoplastic Hot Melt Polyamide Adhesives

Class IV: Thermoplastic-Thermoset Adhesives

20. Polyimide Adhesives

Introduction

Adhesive and Bonding Technology

Foam System

21. Rosin Adhesives

Introduction

Applications

Formulations

Solvent Adhesives

Emulsion Adhesives

Hot Melt Adhesives

Methods of manufacture

22. Silicone Adhesives and Sealants

Introduction

Chemistry

Oxime silane

Properties

Rheological Characteristics

Thermal Stability

Weathering Characteristics

Adhesion Characteristics

Applications

Industrial

Construction

23. Tannin Adhesives

Introduction

Formulation

24. Terpene Based Adhesives

Introduction

Chemistry

Beta-pinene resins

Dipentene resins

Alpha-pinene resins

Physical characteristics of resins

Pressure sensitive adhesives

Hot melt adhesives

Analytical methods

Commercial resins and their uses
Commercial production
Applications in pressure sensitive adhesives
Applications in hot melt adhesives
 25. Starch Adhesives
 Introduction
 Unmodified Starches
 High Strength Adhesive
 Cheap Diluted Adhesive
 Non-weather Proof Corrugated Board Adhesive
 Water Resistant Corrugated Paper Box Adhesive
 Final Mixture
 Acid Modified or Thin Boiling Starch Adhesive
 Oxidised Starch Adhesives
 Dextrin Based Adhesives
 Properties
 26. Acrylic Adhesives and Sealants
 Polymerization
 Solution Polymerization
 Properties of the product
 Emulsion polymerization
 Properties of the dispersion
 Properties
 Formulations and Applications
 Adhesives to paper coated with PVDC
 Delayed tack adhesive
 Adhesives for Laminating
 Laminating Plasticized PVC film to textiles
 Laminating PVC film to particle board
 Laminating plasticized PVC film to split leather
 High temperature & pressure lamination
 Flocking Adhesives
 Building Adhesives
 Adhesives for plasticized PVC floor tiles
 Adhesives for ceramic tiles
 Pressure-Sensitive Adhesives
 Flame Resistant & Pressure Sensitive Adhesive
 Acrylic Sealants
 Aqueous Acrylic Sealants
 Solvent-Based Acrylic Sealants
 27. Pressure Sensitive Adhesives
 Adhesive Strip for Automotive Trim
 Eva-Trialkyl Cyanurate Copolymer Adhesive
 Carboxylate Polymer Based Adhesives
 Fumaric Diester Vinyl Acetate Polymer
 28. Hot melt Adhesives
 Introduction
 Advantages
 Disadvantage
 Formulations
 Ethylene-vinyl Acetate

Amorphous polypropylene and Petroleum Resin
Isopropenyltoluene Copolymers as Tackifiers
Chlorinated Polyphenyl, Chlorinated
Polyisoprene and Nitroso Compound
Carpet Backing Formulation
Other Polyolefin Compositions
Amorphous Polyolefin and Styrene Butadiene
Block Copolymers
a-Methylstyrene Tert Butyl Styreneolefin terpolymers
Alkoxy styrene-Acrylonitrile, Copolymers
Boric Acid as Viscosity Stabiliser in Ethylene-
Propylene Adhesives
Thermoplastic Polymer and Chelate of Aminoacetic
Acid
Coal Tar Pitch and Ethylene-Acrylic-Acid Copolymer
Water-Moistenable Vinyl Pyrrolidone-Vinylacetate
Product

RESINS

1. Alkyd Resins

Introduction

Classification

Synthesis

Etherification

Addition reactions of unsaturated monobasic
fatty acids

Addition reactions with other unsaturated alkyd
ingredients

Reactions during coating formation with drying
alkyds

Reactions during coating formation in alkyd blends

Raw materials

Manufacture

Health and Safety

Quality Control and Specifications

Analysis

Calculations

Uses

Use of Alkyds in Trade-Sales Finishes

Methods of Analysis

Determination of Composition

Chemical Methods

Determination of Properties and Impurities

2. Acrylic Modified Alkyd Resins

Traffic paints

Industrial applications

Conclusion

3. Alkyd-Amino Combinations Based on Neem Oil

Aim of present investigation

Uses of oils in surface coatings

Neem oil

Alkyd resins

Amino resins

Experiments & Results

Preparation of alkyd resin

Alkyd resin preparation

Preparation of amino resin

Testing of performances of resin samples

Discussion

Analysis of neem oil

Preparation of alkyd from neem oil

Preparation of urea formaldehyde resin

Preparation of thiourea formaldehyde resin

Preparation of various samples (mixtures)

Performances of various resin samples

Scratch hardness

Conclusion

4. Amino Resins

Introduction

Raw materials

Chemistry of resin formation

Typical resin formulations and techniques

Urea formaldehyde resins

High solids urea-formaldehyde adhesive resin

Protective coating resin with high mineral spirits tolerance

Methylated urea formaldehyde textile resins

Urea-formaldehyde particle board adhesive

Melamine-formaldehyde resins

Butylated melamine protective coating resin

Chlorine resistant melamine resin

Trimethoxymethyl melamine

Hexamethoxymethyl melamine

Melamine resin molding powder

Melamine resin acid colloid

Control of the extent of the reaction

Free formaldehyde estimation

Viscosity tests

Solubility tests

Cure tests

Urea versus melamine resins

Package stability

Competitive product analysis

Chemical modification for water soluble products

Chemical modification for oil soluble products

Ethyleneurea

Methylated uron textile resins

Uron resins

Glyoxal resins

Miscellaneous resins

Amino resins in the paper industry

Formulations for regular and HE colloids

Toxicity

Methods of Analysis

Competitive Product Analysis

5. Carbohydrate Modified Phenol-formaldehyde

Resins

Introduction

Research on Carbohydrate Modified Resins

Carbohydrate-Modified Base-Catalyzed PF resins

Bonding Veneer Panels

Bonding Flakeboard Panels

Carbohydrate-Modified PF Resins Cured at Neutral Conditions

Bonding Veneer Panels

Color of Bondline

Conclusions

6. Epoxy Resins

Introduction

Synthesis of Resin Intermediates

Cycloaliphatic epoxies

Epoxidized polyolefins

Epoxidised oils and fatty acid esters

Aliphatic-cycloaliphatic glycidyl type resins

Epoxy novolac resins

Resins from phenols other than bisphenol A

Resins from aliphatic polyols

Resins from long chain acids

Fluorinated epoxy resins

Epoxy resins from methylepichlorohydrin

Miscellaneous epoxy resins

Epoxy esters

Water borne epoxy resins and derivatives

Diluents and modifiers

Epoxide reactions and curing mechanisms

Curing of epoxy esters

7. Photographs of Plant & Machinery with Supplier's Contact Details

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