

Handbook on Oleoresin and Pine Chemicals (Rosin, Terpene Derivatives, Tall Oil, Resin & Dimer Acids)

Author: H Panda

Format: Paperback

ISBN: 8178330199

Code: NI207

Pages: 608

Price: Rs. 2,200.00 **US\$** 200.00

Publisher: Asia Pacific Business Press Inc.

Usually ships within **5** days

Oleoresin and pine chemicals are a fascinating group of substances derived from the sap of coniferous trees. This diverse family of products includes rosin, terpene derivatives, tall oil, resin, and dimer acids, each with their own unique properties and characteristics. Rosin, also known as colophony, is a sticky substance that is obtained by distilling the resin from pine trees. Terpene derivatives, on the other hand, are a broad class of compounds that are derived from terpenes, which are the primary components of essential oils in plants. Tall oil is a byproduct of the pulping process in the paper industry. It is obtained by extracting fatty acids from the black liquor, a waste stream generated during pulp production. Resin refers to the mixture of gum and resin obtained from pine trees. It is often processed to remove impurities and concentrated into a solid or liquid form. Dimer acids are a specific type of fatty acid derived from tall oil or other vegetable oils. They are created through a chemical reaction called dimerization, which involves the linking of two fatty acid molecules. Dimer acids are known for their excellent performance as raw materials in the production of various products such as coatings, adhesives, and synthetic lubricants.

The global oleoresin market size is anticipated to witness a compound annual growth rate (CAGR) of 6.9%. Growing demand from healthcare, pharmaceutical, food, and beverage industries are driving forces of the global oleoresin market. Oleoresins are made from varied ingredients and spices, which are found all around the world. It is usually found in semi-solid extract form. A variety of oleoresins has multiple characteristics based on the spice they are derived from. They exhibit numerous therapeutic as well as antioxidant properties as well and are utilized in the pharmaceutical, healthcare, food, and beverage industries. The European region led the market with a revenue share of more than 30%. This is attributed to the increasing demand for flavors and coloring agents from the food & beverage industry. Another factor contributing to increased demand for the product in the region is the demand from cosmetic, fragrance, and personal care products industries that act as a hefty end-use industry for oleoresins.

The Major Contents of the books are Pinus, Oleoresin Extraction, Processing of Oleoresin, Rosin Derivatives, Terpene Based Adhesives, Essential Oil, Wood Turpentine Oil, Turpentine Products, Tall Oil, Dimer Acids.

A comprehensive reference to manufacturing and entrepreneurship in the Oleoresin and Pine Chemicals products business. This book is a one-stop shop for everything you need to know about the Oleoresin and Pine Chemicals products manufacturing industry, which is ripe with potential for manufacturers, merchants, and entrepreneurs. This is the only comprehensive guide to commercial Oleoresin and Pine Chemicals products manufacture. It provides a feast of how-to knowledge, from concept through equipment purchase.

Contents

1. PINUS

- Introduction
- Distribution
- Distribution in India
- Morphology
- Key to the Identification of Indian Species
- Anatomy
- Root
- Root-Stem Transition
- Shoot Apex
- Stem
- Leaf
- Embryology
- Male Cones
- Female Cones
- Pollination
- Receptive Spot
- Fertilization
- Embryogeny
- Seed Coat
- Wing
- Germination
- Cytology
- Seed Testing
- Seed Production and Dormancy
- Breeding
- Diseases
- Mycorrhiza
- Pests

2. PINE OLEORESIN EXTRACTION METHODS

- Introduction
- Cup the Larger-Diameter Trees for Increased Yields and Greater Profits
- Double-Facing
- Gum Yield from Shoulders
- Use Correct Tin Lengths
- First-Year Installation of Spiral Gutters with Double-Headed Nails
- Shaving the Bark
- Attach the Apron First
- Attaching the Spiral Gutter
- Completed Installation
- Use of the Advanced Streak
- Turpentine and Growth
- Bark Chipping
- Mounting and Sharpening the Bark Hack
- Treating the Streak
- Acid Penetration Above the Streak
- Wounding the Tree for Gum Production
- Metal Cups, Acid Corrosion and Gum Grades
- Raising Tins Installed with Double-Headed Nails
- Bark Pulling and Acid Treatment

- How to Use the Spray-Puller
- Acid Paste Method
- Applying the Paste
- Chipping and Paste Treatment
- Streak Height
- Turpented Section Suitable for Other Wood Products
- Beetle Attacks and Control Measures
- The Black Turpentine Beetle
- The Ips Beetle
- Solutions for Beetle Control
- 3. PINES FOR THEIR OLEORESIN
- Occurrence, Formation and Exudation of Oleoresin in Pines
- Oleoresin Tapping
- French Methods
- Spanish Method
- Greek Method
- Indian Method
- Mexican Method
- American Bark-Chipping Method
- The Austrian and German "Herringbone" Methods
- Russian Methods
- Methods in Other Countries
- Felled Pine Wood as Source of Rosin and Turpentine
- Composition of Oleoresin
- Summary
- 4. PROCESSING OF OLEORESIN
- Processing of Oleoresin
- Olustee Gum Cleaning Process
- Recovery of Turpentine and Rosin
- Stripping Column
- Multiple Tube Column
- Luwa Columns
- Fractionation of Turpentine
- Batch Operation
- Semi-Continuous Operation
- Continuous Operation
- Column Packings
- Isomerisation of α -Pinene
- Camphene Via Bornyl Chloride
- Catalytic Isomerisation of α -pinene
- Reaction Mechanism
- Design Aspect of an Isomerisation Reactor
- Liquid Phase
- Vapor Phase
- 5. ROSIN DERIVATIVES AND ITS POTENTIAL
- 6. HYDROGENLESS HYDROGENATION OF RESIN ACIDS
- Experimental
- Results and Discussion
- Transfer Hydrogenation of Isopimaric/Pimaric Acids
- Transfer Hydrogenation of Abietic Acids
- Reaction Mechanism
- 7. NEW DEVELOPMENTS IN ROSIN ESTER AND

DIMER CHEMISTRY

New Rosin Esters

Chemistry of Rosin Dimers

8. TERPENE RESINS

Physical Properties

Chemical Properties

Manufacture

Uses

9. TERPENE BASED ADHESIVES

Introduction

Chemistry

Beta-Pinene Resins

Initiation

Propagation

Termination

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

10. OZONOLYSIS OF ALPHA-PINENE

Effect of Solvent, Ozone Concentration and Temperature on Yields were Investigated

Experimental Conditions are Discussed

11. α -BROMOLONGIFOLENE

Steam Distilled Products

Residue

Chromic Acid Oxidation of Dilongifolenyl Ether

Lead Tetraacetate Oxidation of Longifolene

12. PEROXIDES FROM TURPENTINE

Peroxide Number and Degree of Unsaturation are Tests of Product Quality

Catalytic Hydrogenation of Pinene to Pinane is First Step in Hydroperoxide Production

Small and Large Scale Techniques of Pinane Oxidation are Investigated

Cold-Rubber Polymerization

Decomposition of Pinane Hydroperoxide

Over-all Yield of 85% is Realized in Production of High Purity Hydroperoxide

Peroxidation

Stripping of Oxidates

Polymerization

Heavy Metal Salts Accelerate Decomposition of Pinane Hydroperoxide

Decomposition

Summary

13. PINONIC ACID

Ozonolysis of α -Pinene in Acetic Acid Solution Proved Best Method

Yields were Determined by Partition Chromatography

Ozone Source

Reagents

Ozonization

Calculations and Analyses

Direct Ozonolysis was not Successful

Ozonization in Methanol

Ozonization and Decomposition in Aqueous Acetic Acid at Room Temperature

Ozonization in Aqueous Acetic Acid at 0°C. Decomposition in the Presence of Oxidants

Ozonization in Nitromethane

14. SYLVESTRENE AND SOME OF ITS DERIVATIVES

Sylvestrene

Sylvestrene Nitrosochloride

Sylvestrene Oxide

m-Terpeneols

Sylvestridihydrocarvone

15. 8-ACETOXYCARVOTANACETONE

16. RECOVERY OF 3-CARENE FROM CHINESE

TURPENTINE AND SYNTHESIS OF

ACETYLCARENES

Introduction

Distillation of Wood and Sulfate Turpentine

Material and Methods

Distillation Results

Synthesis of Acetyl-Carene

Materials and Methods

Results and Discussion

Synthesis Products

17. HOMOPOLYMERS AND COPOLYMERS OF

ACRYLATES

Introduction

Results and Discussion

Monomers

Homopolymerization

Copolymerization

Terpolymerization

Epoxidation

Curing

Hydrolysis of Polymethacrylate of I

Experimental

Reduction of α -Campholene Aldehyde

Typical Preparation of a Monomer: Methacrylate of II

Typical Homopolymerization Recipe: Homopolymer Methacrylate of II

Typical Copolymerization Recipe: Copolymer of the Methacrylate of II and Acrylate of I

Solution Copolymer of the Methacrylate of II and Fumaronitrile

Typical Terpolymerization Recipe: Terpolymer of the Acrylate of I, Acrylonitrile and Butadiene

Typical Epoxidation Procedure

18. POLYMERS AND COPOLYMERS OF VINYL

PINOLATE

Preparation of Vinyl Pinolate

Polymerization

Reaction of Vinyl Pinolate Copolymers with Isocyanates

Experimental

Preparation of Vinyl Pinolate

Polymerization of Vinyl Pinolate in Solution

Polymerization of Vinyl Pinolate in Suspension

Polymerization of Vinyl Pinolate in Emulsion

Copolymerization of Vinyl Pinolate and Vinyl Acetate in Solution

Copolymerization of Vinyl Pinolate and Vinyl Chloride in Solution
 Copolymerization of Vinyl Pinolate and Vinyl Chloride in Emulsion
 Reaction of Polymers with Isocyanates
 Evaluation of Vinyl Pinolate and Vinyl Chloride Copolymers
 19. HOMOPOLYMERIZATION OF HYDRONOPYL VINYL ETHER
 Discussion
 Experimental
 Materials
 Preparation of 2-Hydranopoxyethyl Vinyl Ether
 Polymerization of HVE and HEVE
 X-Ray Analysis of Poly (HVE)
 Evaluation of Poly (HEVE)
 20. TERPOLYMERS OF ETHYLENE AND PROPYLENE WITH d-LIMONENE AND α -PINENE
 Introduction
 Results and Discussion
 Experimental
 Materials
 Preparation of EPT Rubber
 Analysis of Unsaturation
 Determination of Gel Content
 Determination of Methyl Group Content in Polymer
 21. LOW MOLECULAR WEIGHT POLYMERS OF d-LIMONENE
 Experimental
 Materials
 General Procedure
 Results
 Infrared Spectra
 Nuclear Magnetic Resonance Spectra
 Optical Activity
 Perbenzoic Acid Oxidation
 Discussion
 22. BASE-CATALYSED ISOMERISATIONS OF TERPENES
 Hydrocarbons
 Alcohols
 Aldehydes
 Ketones
 Acids
 Esters
 Epoxides
 Conclusion
 23. COPOLYMERS OF VINYL CHLORIDE OF PINENE
 Experimental
 Homopolymerization
 Copolymerization
 Test of Heterogeneity of a Copolymer
 Evaluation of New Polymers
 24. POLYALLOXANE-CIMENE
 Experimental
 Monomer

Polymerizations

Polymer

Ozonolysis

Discussion of Results

25. ESSENTIAL OIL IN CHLOROPHYLL-CAROTENE PASTE FROM PINE NEEDLES AND TWIGS

Abstract

26. ESSENTIAL OIL OF THE CONE OF PINUS
SYLVESTRIS VAR. MONGOLICA

27. COMPONENTS OF PINE ROOTS

Conclusions

Composition of the Remaining Neutral Fraction

Composition of the Carbonyl Fraction

Composition of the Hydroxyl Fraction

Results and Discussion

Composition of Turpentine

Composition of the Resin Acid Fraction

28. WOOD TURPENTINE OIL FROM PINE STUMPS

29. BLENDING OF TURPENTINE PRODUCTS

Lilac

Pine Bouquet

Cuir De Russe (for leather)

Violet

Lavender Bouquet

Oriental

Gardenia

Fougere

Eau De Cologne

Amber

Chypre

Ylang Syn

Sweet Pea

30. BIOLOGICALLY ACTIVE COMPOUND FROM
TURPENTINE

Terpenoids as Antimicrobials

Terpenoids as Anthelmintics

Terpenoids as Insecticides

Terpenoids as Plant Growth Hormones

Terpenoids as Anticancer Agents

Terpenoids as Pharmacological Agents

Terpenoid Derivatives as Biodynamic Agents

Terpenoids as Intermediates for Synthesis of Bio-dynamic Agents

31. INSECTICIDES BASED ON TURPENTINE

Toxaphene (C₁₀H₁₀ Cl₈)

Strobane (C₁₀H₁₁ Cl₇)

32. TALL OIL

History of Tall Oil

Production Processes for Tall Oil

Recovery of Tall Oil

Acid Refining of Tall Oil

Fractionation of Tall Oil

Composition and Properties of Tall Oil

Crude Tall Oil

Distilled Tall Oil
 Acid Refined Tall Oil
 Fractionated Tall Oil
 Analysis and Testing of Tall Oil Products
 Shipping, Storage and Handling of Tall Oil Products
 Crude Tall Oil
 Acid Refined Tall Oil
 Tall Oil Fatty Acids and Distilled Tall Oils
 Tall Oil Heads
 Tall Oil Pitch
 Tall Oil Rosin
 Safety Notes
 Applications of Tall Oil
 The Chemistry of Tall Oil Fatty and Rosin Acids
 Chemical Composition of Tall Oil Fatty Acids
 General Reactions of Tall Oil Fatty Acids
 Chemical Composition of Tall Oil Rosin
 General Reactions of Tall Oil Rosin
 Tall Oil Products in Surface Coatings
 Tall Oil in Alkyd Resins
 Tall Oil Formulations in Alkyd Resins
 Esters of Tall Oil Products
 Tall Oil Formulations in Esters
 Other Uses for Tall Oil Products
 Tall Oil in the Plasticizer Field
 Esterification of Tall Oil for Plasticizers
 Tall Oil in Adhesives and Linoleum Cement
 Tall Oil in Rubber-based Adhesives
 Tall Oil in Hot-Melt Adhesives
 Tall Oil Products in Linoleum Cements
 Formulation with Tall Oil
 Formulation with Tall Oil Esters
 33. DIMER ACIDS
 The General Characteristics of Dimer Acids
 Introduction
 Dimer Acids Manufacture and Feedstock
 By Products of the Dimerization Reaction
 Monomer Acids
 Trimer Acids
 Structure and Properties of Dimer Acids
 Structure of Dimer Acids
 Analysis of Dimer Acids
 Physical Properties of Dimer Acids
 Chemical Reactions of Dimer Acids
 Reactions of the Double Bonds and at the α -Carbon Atoms
 Reactions of the Carboxyl Groups to Produce Monomeric Derivatives
 Reactions of the Carboxyl Groups to Produce Polymeric Derivatives
 Commercial Applications of Dimer Acids and Their Derivatives
 Introduction
 Applications of Dimer Acids
 Applications of Monomer Acids and Derivatives
 Applications of Trimer Acids and Derivatives
 Applications of Low-Molecular Weight Derivatives of Dimer Acids

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

Wed, 13 Mar 2024 13:20:39 +0530