

Logo

106-E, Kamla Nagar, New Delhi-110007, India.
Tel: 91-11-23843955, 23845654, 23845886, +918800733955
Mobile: +91-9811043595
Email: npcs.ei@gmail.com, info@entrepreneurindia.co
Website: www.entrepreneurIndia.co

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

Code: NI207	Format: paperback
Indian Price: ₹2200	US Price: \$200
Pages: 608	ISBN: 8178330199
Publisher: Asia Pacific Business Press Inc.	

Description

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.

Content

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 Current 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

Turpentine 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

Sylvestrihydrocarvone

15. 8-ACETOXYCARVOTANACETONE

16. RECOVERY OF 3-CARENE FROM CHINESE

TURPENTINE AND SYNTHESIS OF

ACETYLCARENES

Introduction

Distillation of Wood and Sulfate Turpentines

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-Hydroxypropoxyethyl 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. POLYALLOX-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- γ -dynamic Agents

31. INSECTICIDES BASED ON TURPENTINE

Toxaphene ($C_{10}H_{10}Cl_8$)

Strobane ($C_{10}H_{11}Cl_7$)

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

Applications of High-Molecular Weight Dimer Acids Derivatives

Applications of Other Polymeric Nitrogen Derivatives of Dimer Acids

About NIIR Project Consultancy Services (NPCS)

NIIR Project Consultancy Services (NPCS) is a reliable name in the industrial world for offering integrated technical consultancy services. Its various services are: Pre-feasibility study, New Project Identification, Project Feasibility and Market Study, Identification of Profitable Industrial Project Opportunities, Preparation of Project Profiles and Pre-Investment and Pre-Feasibility Studies, Market Surveys and Studies, Preparation of Techno-Economic Feasibility Reports, Identification and Selection of Plant and Machinery, Manufacturing Process and/or Equipment required, General Guidance, Technical and Commercial Counseling for setting up new industrial projects and industry. NPCS also publishes various technology books, directories, databases, detailed project reports, market survey reports on various industries and profit making business. Besides being used by manufacturers, industrialists, and entrepreneurs, our publications are also used by Indian and overseas professionals including project engineers, information services bureaus, consultants and consultancy firms as one of the inputs in their research.

NIIR PROJECT CONSULTANCY SERVICES

106-E, Kamla Nagar, New Delhi-110007, India.

Tel: 91-11-23843955, 23845654, 23845886, +918800733955

Mobile: +91-9811043595

Email: npcs.ei@gmail.com, info@entrepreneurindia.co

Website: www.entrepreneurIndia.co