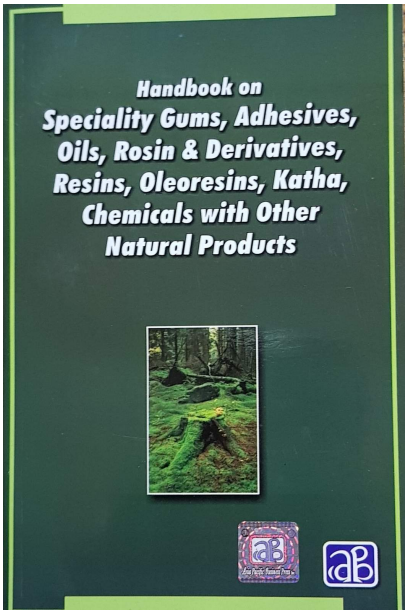
Entrepreneur India

106-E, Kamla Nagar, New Delhi-110007, India.
Tel: 91-11-23843955, +91 9097075054
Mobile: +91-9097075054
Email: npcs.ei@gmail.com, info@entrepreneurindia.co
Website: www.entrepreneurIndia.co



Handbook on Speciality Gums, Adhesives, Oils, Rosin & Derivatives, Resins, Oleoresins, Katha, Chemicals with other Natural Products

Code	NI149
Format	paperback
Indian Price	₹2175
US Price	$150
Pages	834

ISBN	9788178330259
Publisher	Asia Pacific Business Press Inc.

Description

The forest in India yields a large number of products, which play an important role in the economy of the country. Natural products may be extracted from tissues of terrestrial plants, marine organisms or microorganism fermentation broths. A crude (untreated) extract from any one of these sources typically contains novel, structurally diverse chemical compounds, which the natural environment is a rich source of. There are numerous product which is has a vital commercial applications for example gum karaya, locust bean gum, tamarind gum, rosin and rosin derivatives, turpentine and its derivaties, tall oil and its derivatives, essential oil of deodar, essential oils of cinnamum species and many more. Gum is any of a number of naturally occurring resinous materials in vegetative species. Various essential oils are also obtained from natural resources like deodar, Juniperus recurvavar, Suamata, Cinnamum species, agar wood etc. Tall oil products find use in many product applications because of their economy and ready availability. Tall oil is more like a chemical product with a constant and dependable supply and a steady price. It has a large number of applications like; adhesives, carbon paper, cement addition agent, detergents, drawing oils, fungicides, lubricants, soaps, rubber additives, surface coating etc. Phenolic adhesives continue to be the most significant adhesives for the production of weather resistant wood products. In terms of volume of trade, revenue and employment potential, the minor forest products have surpassed the traditional major forest products viz, timber, firewood, pulp, wood etc. Aromatic and medicinal plants are one the major resource from forests; the medicinal plants have been used since ancient times for the treatment of human ailments. Rosin, also called colophony is a solid form of resin obtained from pines and some other plants, mostly conifers, produced by heating fresh liquid resin to vaporize the volatile liquid terpene components. It is semi transparent and varies in color from yellow to black. At room temperature rosin is brittle, but it melts at stove top temperatures. It chiefly consists of different resin acids, especially abietic acid. Oleoresin is a naturally occurring mixture of oil and a resin extracted from various plants, such as pine or balsam fir. Over three quarters of the world population relies mainly on plants and plant extracts for health care. Natural products have evolved to encompass a broad spectrum of chemical and functional diversity. It is this diversity, along with their structural complexity, that enables small natural molecules to target a nearly limitless number of biological macromolecules and often to do so in a highly selective fashion. Because of these characteristics, natural products have seen great success as therapeutic agents. However, this vast pool of compounds holds much promise beyond the development of future drugs.

This book makes an attempt to provide information of chemical nature, physical properties, manufacturing process, purification, applications, and compatibility of gums, adhesives, oils, rosin & derivatives, resins, oleoresins, katha, chemicals with other natural products. This book contains chapter on rosin and rosin derivatives, esterification of methylolated rosin, turpentine and its derivaties, tall oil and its derivatives, tall oil in liquid soaps, essential oils of cinnamum species, utilization of tannin from waste conicer barks, katha production in Tarai area of Uttar Pradesh, adhesives for wood based on natural polyphenolic substance, etc.
This book contains process of forest based products like Gums, Resins, Oleoresins, Essential Oils and other natural products obtained from Indian forests. It gives an insight of richness and vastness of the forest wealth. This book is first of its kind, which covers comprehensive treasure of information on a wide variety of products. This is very resourceful book for students, growers and marketing agencies, country where there is rich flora and fauna awaiting proper exploitation, production and utilization.

Content

CHAPTER 1
GUM GHATTI
Chemical Nature
Physical Properties
Manufacture
Biological/Toxicological Properties
Handling
Application Procedures
Commercial Uses
Industries using Gum Ghatti
Formulations Wax Emulsion
Table Syrup Emulsion
Laboratory Techniques
Bark and Foreign Organic Matter (BFOM)
Viscosity (5% Solution)
Viscosity (7% Solution)

CHAPTER 2
GUAR GUM
Manufacture
Seed Structure
Purification
Grades

Chemical and Physical Properties
Structure
Solubility in Water
Rheology
Reactivity
Biological Properties
Handling
Dry Storage
Solution Preparation
Applications
Oil and Gas
Explosives
Textile
Food
Paper
Mining
Commercial Applications: Compounding and Formulating
Food
Explosives
Commercial Uses: Processing Aids
Oil and Gas
Textile
Carpets
Paper
Kraft Papers
Kraft Linerboard
Recycled Linerboard
Corrugating Medium
Boxboard
Offset News Stock
White Papers
Mining
Industries using Guar Gum
Oil and Gas
Explosives
Food
Paper
Textile
Mining
Formulations
Ice Cream

Ice Milk
Sherbet
Sour Cream
Buttermilk
Yogurt
Instant Imitation Bakery Jelly
Whipping Composition for Frozen Deserts

CHAPTER 3
GUM ARABIC
Chemical Nature
Physical Properties
Manufacture
Biological/Toxicological Properties
Rheological Properties
Additives/extenders
Additives
Extenders Handling
Applications
Application Procedures
Compatibility
Commercial Uses
Food Applications
Confectioneries
Dairy Products
Bakery Products
Flavor Fixation
Flavor Emulsification
Beverages
Pharmaceutical
Suspending Agent
Demulcent Agent
Emulsification
Antiseptic Preparation
Miscellaneous Applications Medicines
Cosmetics
Adhesives
Paints
Inks
Lithography
Textiles

Miscellaneous Uses
Industries using Gum Arabic
Food Industry
Pharmaceutical Industry
Cosmetic Industry
Other Industries
Formulations
Confectioneries
Food Emulsions
Pickle Oil Emulsion
Pickle Juice
Beverages
Stabilized Fruit Drink
Dry mix Lmitation Orange Drink
Cloud Gum
Beverage Stabilizers
Nut Coating
Inks
Gloss finish Inks Wood grain Inks
Laboratory Techniques
30% Viscosity Method
Insoluble Residue
Sediment and Color
Peroxidase Content

CHAPTER 4
GUM KARAYA
General Information
Chemical Nature
Physical Properties
Films
Adhesiveness
Hydrolysis
Pastes
Grades
Manufacture
Biological/Toxicological Properties
Short term Studies
Long term Studies
Special Studies
Rheological Properties

Handling
Applications
Application Procedures
Compatibility
Future Develovments Commercial Uses
Commercial Uses
Pharmaceuticals
Pulp and Paper
Food Products
Textiles
Petroleum and Gas Recovery
Industries using Gum Karaya
Formulations : Pharmaceuticals
Denture Adhesive
Colostomy Rings
Cosmetic
Alcohol Wave set Concentrate
Typical Wave set Formula
Food Products : Sherbet Stabilization

CHAPTER 5
GUM TRAGACANTH
Chemical Nature
Structure
Reactivities Acid
Labile Sugars
Electrochemical Properties
Physical Properties : Rheological Properties
Biological/Toxicological Properties
Consumer Exposure Data
Caloric Value
Hypercholesterolemia
Tumors
Allergenic Properties
Lethal Effects
Manufacturing and Quality Control
Handling
Additives and Extenders
Application Procedures
Specialties

Future Developments
Commercial Uses: Compounding and Formulating
Pharmaceutical and Medical
Food Products
Ice Cream Stabilizers
Water Ices
Commercial Uses: Processing Aids
Crayon Manufacture
Ceramics Manufacture
Leather Curing
Textiles Processing
Paper Processing
Wooden Match Manufacture
Industries using Gum Tragacanth
Food Industry
Pharmaceutical and Cosmetic Industries
General Industrial Uses
Formulations
Italian Dressing
Russian Dressing
Blue Cheese Dressing
French Dressing
Low calorie Italian type Dressing
Sweet and Sour Sauce
Low calorie French type Dressing
Barbecue Sauce
Dietetic (artificial) Fruit Jelly
Citrus flavor Beverage Emulsions
Low calorie Chocolate Syrup
Low calorie Chocolate Pudding
Marshmallow Topping
Nondairy Sour Cream
Toasted Onion flavored Chip Dip
Mesican flavored Chip Dip
Tuna, Chiken and Ham Salad Spreads

Cole Slaw Dressing
Imitation Mayonnaise Dressing
Mustard Sauce
Spaghetti Sauce
Pickle Relish

Laboratory Techniques
Identification
Microscope Instrument
Viscosity Testing

CHAPTER 6
LOCUST BEAN GUM
Manufacture
Seed Structure
Purification
Grades
Properties
Structure
Solubility in Water
Rheology
Reactivity : Dericatices
Commercial Uses : Compounding and Formulating
Food Products
Ice Cream
Cheese
Sauces and Salad Dressings
Canned Pet Food
Commercial Uses : Processing Aids
Textiles Processing
Carpets Processing
Dyeing Carpets
Paper Products
Wet end Addition
Gum Preparation
Mining Industry
Industries using Locust Bean Gum : Food Industry
Mining Industry
Paper Industry
Textiles Industry
Formulation Ice Cream
Ice Milk
Sherbet
Sour Cream
Buttermilk
Yogurt
Instant Lmitation Bakery Jelly

Whipping Cream Composition (for Frozen Desserts)

CHAPTER 7
TAMARIND GUM
Chemical Nature
Molecular Weight
Derivatives
Miscellaneous
Physical Properties
Manufacture
Bilogical/Toxicological Properties
Electrochemical Properties
Rheological Properties
Handling
Applications
By Result
By End Product
By Industry
Application Procedures
Future Developments
Commercial Uses
Processing Aids
Industries using Tamarind Gum
Formulations
Size for Jute Yarn
Size for Cotton Warps
Latex Manufacture
Other Uses
Laboratory Procedures
Viscosity Method
Acid Insoluble Residue (Air)
Fat Content 33
Term Glossary
General Information
Chemical Structure
Physical Properties
Solution Properties
Effect of Salts on Viscosity
Effect of PH on Viscosity
Gelation With Metals
Regulatory Status

Commercial Uses : Food
Xanthan Gum
Dressings
Foods and Drinks
Other Products
Xanthan Gum With Locust Bean Gum
Commcercial Uses : Industrial
Xanthan Gum
Viscosity Control
Other Applications
Xanthan Gum With Locust Bean Gum
Agricultural Sprays
Gelled Products
Slurried Explosives
Fire Fighting
Paper Sizing
Photographic Processing
Formulations
Dessert Soulfles
Vanilla Souffle
Chocolate Souffle
Lemon Souffle
Bakery Jellies
Salad Dressings
Green Goddess
Creamy Russion
French Dressing
Creamy Italian
Italian Dressing
Dry Sauce Mixes
Cheese Sauce Mix
Barbecue Sauce Mix
Spaghetti Sauce Mix
White Sauce Mix1
Frozen Pizzas
Animal Feeds (Liquid)
Laboratory Techniques
Viscosity (Food Grade)
Viscosity (Industrial Grade)
Moisture Content
Powder Color

Determination of Gum in Mixtures

CHAPTER 8
CASSIA SIAMEA LAM. SEED
A NEW SOURCE OF COMMERCIAL GUM
Material and Methods
Results and Discussion

CHAPTER 9
ROSIN AND ROSIN DERIVATIVES
Composition
Reaction and Derivatives
Isomerization
Maleation
Oxidation
Photosensitized Oxidation
Hydrogenation
Hydrogenless Hydrogenation
Polymers of Vinyl Esters of Hydrogenated Rosin
Perhydrogenation
Hydrocracking of Rosin
Dehydrogenation
Polymerization
Analysis
Instrumental Analysis
Phenolic Modification
Salt Formation
Esterification
Hydrogenolysis
Polyesterification
Copolyesters
Ammonolysis
Preparations
Typical Uses
Styrenation
Decarboxylation
Hydroxymethylation and Hydroxylation
Nitrogenous Intermediates
Oxonation
Esterification of Methylolated Rosin
Amidation (12 AEAA)

Halogenated Rosin
Non phthalic Alkyd Resins
Shellacemodified Rosin
Use of Rosin in the Polymer Field
Adhesives
Hot Melt Adhesives
Chewing Gum
Floor Polishes
Flooring Materials (Vinyl Flooring)
Linoleum
Paper Sizing
Printing Inks
Letter Press Inks
Flexographic Inks
Gravure Inks
Lithographic Inks
Protective Coatings
Air Drying Hammer Finish
Epoxy Esters
Lacquers
Varnishes
Rubber
Pharmaceutical Uses

CHAPTER 10
TURPENTINE AND ITS DERIVATIES
Introduction
(i) Processing of Oleoresin
I. Olustee Gum Cleaning Process
II. Recovery of Turpentine and Rosin
Batch Processing
Continuous Processing
Heater
Stripping Column
1. Multiple Tube Column
2. Luwa Columns
(ii) Fractionation of Turpentine
Batch Operation
Semi continuous Operation
Continuous Operation
Column Packings

Catalytic Isomeiztion of alpha pinene
pinene
carene
Longi Folene
Methods of Preparation of Terpene Derivatives
Camphene
Thanite : Properties
Applications
P Menthadienes and P cymene
Myrcene
Alloocimene
Geraniol and Nerol
Linalool
Citral
Ionones and Methylonones
Citronellol
Citronellal
Myrcenol
Menthol
Carvone
Camphor
Pine Oil
Terpin Hydrate
Terpineols
Isobornyl Acetate Adn Isoborneol
Cinedles
Terpen Resing (TPR)
Thymol
Xtone 505
Terpinyl Acetate
Isolongi Folene
Actyl Longifolene
Camphor Oil
Fenchone
Aclinol
Acinone
Pinetar
Future Utilizations
Uses of Terpene Derivatives
Perfumes and Flavours
Jasmin

Orange Flower and Neroli
Vidlet
Fougere (Fern)
Lily of the Valley
Linden (Lime Blossom)
Green Perfumes
Perfumes for Men
Soap
Masking
Agarbatti
Textile Perfumes
Aerosol Products
Supari Chewing Tobacco
Cigarettes
Boot Polish
Perfumed Disinfectants
Medicines
Pressure Sensitive Adhesives (PAS)
Hot Melt Adhesives (HMA) and Coatings
Other Uses
Latest Uses of Terpene Solvent

CHAPTER 11
TALL OIL AND ITS DERIVATIVES
Production Processes for Tall Oil
Recovery of Tall Oi
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

Applications of Tall Oil

CHAPTER 12
THE CHEMISTRY OF TALL OIL FATTY AND ROSIN ACIDS
Chemical Composition of Tall Oil Fatty Acids
General Reactions of Tall Oil Fatty Acids
Reactions Involving the Double Bonds
Reactions Involving the Carboxyl Group
Chemical Composition of Tall Rosin
General Reactions of Tall Oil Rosin
Reactions Involving the Carboxyl Group
Reactions Involving the Double Bonds

CHAPTER 13
TALL OIL PRODUCTS IN SURFACE COATINGS
Tall Oil in Alkyd Resins
Tall Oil Formulation in Alkyd Resins
Short Oil Banking Alkyd solvent Process
Short Oil Banking Alkyd fusion Process
Long Oil Alkyd fusion Process
Rosin Modified Alkyd fusion Process
Epoxy Modified Alkyd
Esters of Tall Oil Products Tall Oil Fatty Acids
Tall Oil Rosin
Tall Oil Formulations in Esters
Glycerine Ester
Maleic Modified Ester
Distilled Tall Oil Epoxy Ester
Tall Oil Pitch
Other Uses for Oil Products
Limed Tall Oil Rosin
Limed Acid Refined or Distilled Tall Oils
Styrene Resins
Latex Paints
Polyurethanes
Putty and Caulking Compounds
Varnishes
Tallate Driers
Tempering Oils for Hardboard

CHAPTER 14

TALL OIL IN THE PLASTICIZER FIELD
Tall Oil Plasticizers
Esterification of Tall Oil for Plasticizers

CHAPTER 15
TALL OIL IN ADHESIVES AND LINOLEUM CEMENT
Tall Oil Rubber Adhesives
Tall Oil in Hot Melt Adhesives
Tall Oil Products in Linoleum Cements
Formulation With Tall Oil
Formulation With Tall Oil Esters

CHAPTER 16
TALL OIL IN ASPHALT PRODUCTS AND PETROLEUM USES
Tall Oil in Asphalt
Roads
Soil Treatments
Roofing
Adhesives
Antistripping Agents
Plasticizers
Miscellaneous
Tall Oil in Petroleum Applications
Oil and Gas Well Fracturing
Drilling Muds
Demulsification Agents
Corrosion Inhibitors
Catalyst
Lubricating Oil Additives

CHAPTER 17
TALL OIL IN LIQUID SOAPS
Tall Oil in Disinfectants
Tall Oil in Synthetic Detergents and Wetting Agents
Syndet Types
Syndet Products
Tall Oil in Biodegradable Detergents

CHAPTER 18
TALL OIL IN FLOTAION COLLECTORS AND CORE OILS
Tall Oil in Flotation Collectors

Flotaion Collectors
Flotation Applications
Tall Oil in Core Oils

CHAPTER 19
TALL OIL IN RUBBER
Styrene butadiene Rubber
Cold SBR Formulation (SBR 1500 Series)
Hot SBR Formulation (SBR 1000 Series)
Cold High Solids SBR 2105 Latex Formulation (SBR 2100 Series)
Hot SBR Latex Fromulation (SBR 2000 Series Type II)
Foam Rubber

CHAPTER 20
TALL OIL IN PAPER SIZE
Paper Making Process
Rosin Sizing Materials
Forms of Size Available
Paste Size
Dry Size
Methods of Preparing Liquid Size
Cooking Process
Emulsion Process
Bewoid Process
Delthirna Process
Internal and External Sizing
Effect of Wet Strength Resins and
Paper Coating Resins on Sizing
Sizing of Nonconventional Paper
Testing of Sizing
Water Resistance of Paper and Paperboard T433 M 44
(Dry Indicator Method)
Water Immersion Test of Paperboard
Water Absorption of Paperboard
Water Absorptiveness of Nonbibulous Paper and Papeboard
T441 M 60 (Cobb Test)
Degree of Curl and Sizing of Paper T466 M 52
Ink Penetration Test
Fotosize Penetration Test Lactic Acid Test

CHAPTER 21

TALL OIL IN PRINTING INKS
Typographic Printing and Typographic Inks
Heat Set Inks
Steam Set Inks
Newsprint Inks
Lithographic Printing and Lithographic Inks
Intagio or Gravure Printing and Gravure Inks
Silk Screen Printing Inks
Overprint Varnishes
Bag Inks

CHAPTER 22
MISCELLANEOUS APPLICATIONS OF TALL OIL
Tall Oil Fatty Acids for Chemical Intermediates
Polymerized Fatty Acids
Azelaic and Pelargonic Acids
Tall Oil in Corecipitated Barium Salts
Tall Oil in Defoamers
Tall Oil Pigment Dispersants
Tall Oil in Masonry and Cement Coatings

CHAPTER 23
EUCALYPTUS : A VERSATILE MATERIAL FOR
AROMA CHEMICALS

CHAPTER 24
HIMALAYAN CEDARWOOD OIL
Indian Himalayan Cedarwood Oil
Comparative Studies
Export of Himalayan Cedarwood Oil from India
Solvent Extraction of the Oil
Purification of the Oil
Empyreumatic Himalayan Cedarwood Oil Vern. Chiloon Oil

CHAPTER 25
ESSENTIAL OIL OF DEODAR (CEDRUS DEODARA)
The Essential Oil
Raw Material
Physico chemical Properties
Chemical Composition of C. Deodara
Distillation

Latest Research Work
Uses of Cedarwood Oils

CHAPTER 26
ESSENTIAL OIL OF JUNIPERUS RECURVA VAR.
SQUAMATA AND OTHER OILS OF JUNIPERUS SPP.
Oil From Berries
Oil From Leaves
Oil From Wood
Experimental
Tlc of the Oil
Glc of the Oil

CHAPTER 27
AGARWOOD AND OIL OF ARARWOOD
Physico chemicals Properties and Chemical Composition
Trade and Production of Agar and Its Oil
Uses

CHAPTER 28
ESSENTIAL OILS OF CINNAMUM SPECIES
Cinnamum Cassia (nees) Nees Ex Blume
Export Import of Cassia and Tejpat Leaves

CHAPTER 29
LIGNIN AND ITS DERIVATIVES
Primary Source
Manufacture of Lignin and Its Derivetives:
General Properties
Commercial Lignins
Uses

CHAPTER 30
UTILIZATION OF TANNIN FROM WASTE CONICER BARKS
Chir Pine and Its Availability
Techinical Analysis
(a) Evaluation Studies
(b) Leaching Studies
(c) Tanning Procedure : (1)
Conclusion and Suggestions

CHAPTER 31
LEACHING AND TANNING STUDIES ON
COMMERCIAL GRADE NASPAL (POMEGRANATE RIND)
Experimental
Conclusions

CHAPTER 32
CHEMICAL EXAMINATION OF THE TANNIN
PEARING PLANTS OF THE FORESTS OF ANDHRA PRADESH

CHAPTER 33
SAL SEEDS A NEW SOURCE OF TANNING MATERIAL
Isolation and Identification of Polyphenolic Construents
Separation and Utilisation of Sal Tannings

CHAPTER 34
PREPARATION OF PHENOLIC RESINS FROM
MYROBALAN TANNIN EXTRACS
Polyphenolic Compounds of Myrobalan
Reaction of Formaldehyde With Myrobalan Extract in Presence of
Both Acid and Alkali Catalyst
Condensation With Formaldehyde
Condensation Reaction of Gallic Acid with Formaldehyde
Reimer Tieman Reactions
Duff Reaction
Villsmeyer Reaction

CHAPTER 35
KATHA PRODUCTION IN TARAI AREA OF UTTAR PRADESH
Chipping
Extraction
Concentration
Crystallization
Filtration
Hydraulic Press
Hydraulic Press
Drying of Katha Batties
Manufacture of Deshi Katha
Utilization of Byproducts

CHAPTER 36

STUDIES ON THE EFECTS OF WOOD MOISTURE ON
THE RECOVERY OF KATHA FROM ACACIA CATECHU
Experimental
Result & Discussion
Inferences

CHAPTER 37
EXTRACTION OF PURE CATECHIN FROM KHAIR WOOD
AND KATHA SAMPLES AND AN IMPROVED METHOD FOR
ITS ESTIMATION
Experimental
Extraction of Catechin From Wood by using Organic Solvents

CHAPTER 38
ADHESIVES FOR WOOD BASED ON
NATURAL POLYPHENOLIC SUBSTANCE
Adhesives Based on Tannins
Tannins are Classified in two Groups
Adhesives Based on Lignins

CHAPTER 39
LAC PRODUCTION, UTILISATION AND FUTURE
Production
Utilisation

CHAPTER 40
HIGH ALPHA CELLULOSE PULP EXPERIMENTAD
RESUMS & DISCUSSION FROM POPLAR CASALE
Analysis

CHAPTER 41
HIGH ALPHA CELLULOSE FROM FAST GROWING
PLANTS SUCH AS CROTALARIA JUNCEA AND
CROTALARIA RETUSA
Experimental
Results & Discussions

CHAPTER 42
UTILIZATION OF PINUS CARIBAEA NEEDLES FOR
FIBRE BOARDS
Material & Method

Board Formation
Additives Blending
Pressing
Results and Discussions

CHAPTER 43
WOOD POLYMER COMPOSITES AND
THEIR INDUSTRIAL APPLICATIONS
Chemistry of the Process
Impregation Process
Monomers for Wood Polymer Composites
Physical Properties
Commercial Applications
Catalys Heat Process
World Wide Production

CHAPTER 44
POLYURETHANE FOAMS FROM THE REACTION OF
BARK AND DIISOCYANATE

CHAPTER 45
PARTICLEBOARD MANUFACTURE AND PROCESSING
Definition
Raw Materials
Wood
Adhesive
Wax Emulsions
Manufacturing : Particle Preparation
Particle Drying
Blending
Mat Formation
Pressing Operation
Finishing
Surface Finishing
Grain Printing on Flat Panels
Conclusion

CHAPTER 46
CARBOHYDRATE MODIFIED PHENOL FORMALDEHYDE
RESINS FORMULATED AT NEUTRAL CONDITIONS
Experimental Methodology : Adhesive Formulation

Veneer
Bonding
Determination of Shear Strength
Prehydrolyis of Southern Red Oak
Extraction of Cured, Modified Phenol formaldehyde Resins
Isolation of Compounds VI VIII
Results and Discussion : Bonding Veener Panels
Incorporation of Carbohydrate Into Cured Raesin

CHAPTER 47
UTILIZATION OF MINOR OIL SEEDS
Appendix
Mahuva : (Madhuca Latifolia or M. Lonoifolia)
Sal : (Shorea Rubsta)
Kusum : (Schleichera Trijuga)
Khakhan : (Salvadora Olecedes)
Tamarind : (Tamarindus Indiac)
Undi : (Calohyllum Inophyllum)
Karanda Oil : (Pongamia Glabra)
Pisa : (Aetinodaphone Bookeri)
Neem : (Azadirachta Indica)
Kokum :(Garcinia Indica)
Dhupa : (Veteria Indica)

CHAPTER 48
CHEMICAL INVESTIGATION OF FATTY OIL OF
BURSERA PENICILLATION SEED
Composition of the Seed Kernel Oil

CHAPTER 49
ABUTILON INDICUM SEED OIL: CHARACTERISATION OF
HBR REACTIVE ACIDS

CHAPTER 50
A NEW B HYDROXY OLEFINIC FATTY ACID
IN PLANTAGO MAJOR (PLANTAGINACEAA) SEED OIL

CHAPTER 51
GYANOLIPIDS OF BORAGINAGEA SEED OILS

CHAPTER 52

STYRNE COPOLYMERINZATION OF BABUL (ACACIA)
OIL AND ISTS ALKY
Experimental Materials Used
Refining and Bleaching of the Oil
Isomerization
Styrenation of Babul Oil
Preparation of Styrenated Alkyds
Pre styrenation Process
Formulation
Post Styrenation Process
Formulation
Testing
Results and Discussion
Conclusion

CHAPTER 53
INVESTIGATION OF NEEM SEED SHELL FLOUR
Experimental : Preparation of Sample
Treatment of the Shell Flour
Preparation of Moulding Powder

CHAPTER 54
DEVELOPMENT OF SALSEED OIL INDUSTRY

CHAPTER 55
STUDIES ON TAMARIND KERNEL OIL
Experimental : Materials
General Methods
Extraction, Purification and General Characterization of
Tamarind Kernel Oil
Analysis of Fatty Acid Composition
Extraction and Identification of Monoglycerides
Extraction and Identification of Free Fatty Acids
Isolation and Characterization of Unsaponifiable Matter
Fractionation of Tamarind Kernel Oil
Analysis of Neutral Lipids
Deacylation of Phospholipid Fractions
Hydrolysis of Phospholipids, Identification of Bases
Identification of Polyhydroxy Compounds
Analysis of Glycolipid Fraction
Indentification of Component Sugare

Tlc Analysis of Glycolipid Fraction
Analysis of Sterol Glycoside
Componental Analyysis of Asg
Results and Discussion : Total Fatty Acids
Neutral Lipids
Unsaponifiable Matter
Samples Phospholipids
Gyclolipids

CHAPTER 56
TECHNOECONOMIC EVALUATION OF ANGELICA ARCHANGELICA ROOTS AS A COMMERCIAL SOURCE OF ANGELICA OIL
Materials and Methods
Technoeconomic Evaluation

CHAPTER 57
COMMERCIAL UTILISATION OF INDIAN BERBERSIS
Raw Material
Chemical Evaluation
Resources

CHAPTER 58
PROCESS DEVELOPMENT FOR HECOGENIN AND SOLASODINE
Hecogenin From Agave Species
Solasodine From : Solanum Khasianum

CHAPTER 59
PRODUCTION OF STRYCHINE AND BRUCINE FROM NUX VOMICA PROCESS:
Process
Yields
Equipments Required
Raw Materials
Economics

CHAPTER 60
AN IMPROVED METHOD FOR THE PRODUCTION OF SRUCINE AND STRYCHNINE FROM STRYCHNOS NUX VOMICA BARK

Uses
Earlier Methods of Extraction of Strychnine and Brucin
Improved Method for the Extraction of Brucine and Strychnine

CHAPTER 61
HERACLEUM SPECIES AS SOURCES FOR
FURANOCOUMARINS

CHAPTER 62
MEDICINAL AND AROMATIC PLANT RESURCES OF
THE KUMAON HIMALAYAS: PRESENT PUSITION, FUTURE
STRATEGIES AND PROSPECTS
Appendix 1 : Medicinal Plants Bearing Alkaloids
Appendix II: Plants Bearing Glycosides
Appendix III : Plants Bearing Edible and
Appendix IV : Plants Bearing Tannins
Appendix V : Plants Bearing Essential Oils

CHAPTER 63
UTILIZATION OF APRICOT KERNELS AND
A SOURCE OF VITAMIN B15

CHAPTER 64
SOLVENT EXTRACTION OF ARTEMISIA ANNUAL ON
PILOT PLANT SCALE
Experimental Procedure
A. Bench Scale Study
B. Pilot Plant Scale Study
Results and Discussion

CHAPTER 65
CANDELILLA WAX
Results and Discussion
Transplanting and Harvesting
Yield of Stems and Wax
Physico Chemical Properties
Results & Discussion

CHAPTER 66
CHEMURGY OF KALPVRIKSHA
Collection

Transportation
Drying
Decortication
Crushing/Extraction
Solvent Extraction
Saponin
Wet Rendering Process
Production of Palmitic Acid
High Pressure Splitting
Meal
Seed Coat

CHAPTER 67
UTILIZATION OF MOHUA FLOWERS FOR
CITRIC ACID PRODUCTION
Materials and Methods
Microorganism
Growth of the Organism
Viscosity
Determination of Sugar
Determination of Citric Acid: Fermentation Conditions
Results and Discussion
Effect of Cultural Conditions of Citrate Production

CHAPTER 68
INDUSTRIAL UTILIZATION OF KOKAM

CHAPTER 69
NUTRITIVE VALUE OF SOME LESSER KNOWN
WILD FRUITS OF JAMMU & KASHMIR STATE
Availability and Utilization
Experimental
Results and Discussion

CHAPTER 70
WILD VEGETABLE OOD MATERIALS OF JAMMU AND KASHMIR
Bauhinia Variegata Linn
Bombax Ceiba Linn
Capparts Spinosa Linn
Caralluma Tuberculata N.E. Br.
Cicer Soongaricum Stapf

Coccinia Cordifolia
Codonopsis Ovata Benth
Corylus Colurna Linn.
Diplaium Esculentum
Emblica Officinalis Gaertn.
Eremurus Spp.
Euphorbia Royleana Linn.
Megacarpaea Polyandra Benth.
Momordica Dioica Roxb.
Morniga Oleifera Lamk
Punica Ranatum Linn
Rheum Spp. R.emodi Wall
Taraxacum Officinale Weber
Telosma Pallia Craib. (D.Goalmanda)

CHAPTER 71
EDIBLE MUSHROOMS OF JAMMU & KASHMIR FORESTS
Morels (Morchella Sp.)
Dhingri (Pleurotus)
Pleurotus Fossulatus (Cooke) Sacc
Pleurotus Flabellatus (Berk, and Br.) Sacc; Vern
Other Edible Mushrooms
Coprinus
Geopora Arenicola
Boletus Sp.
Agrocybe Cylindracea (D.C. ex. Fr) R.maire
Flammulina Velutipes Curt. Ex. Fr. (Karst): Lactarius
Scrobiculatus Scop. Ex. Fr.
Tuber Cibarium Sibth.

CHAPTER 72
PROSPECTS OF FURFURAL AND FURFURAL
BASED INDUSTRIES IN INDIA
Uses
Conventional Processes
Possibilities
Conclusion

CHAPTER 73
KEWDA INDUSTRY IN ORISSA
Distribution Pattern and Availability of the Plant

Historical Development and Present Set Up of the Industry
Uses and Demand of the Perfume
Collection
Distillation
Cost Estimation
Present Position and Future Prospects of the Industry

CHAPTER 74
PENCIL RAW MATERIALS IN KERALA
Industry A Birds Eye View
Specification of Wood
Species Used and Availability
Some Suggestions conclusion
Conclusion

CHAPTER 75
FOREST BASD RAW MATERIALS IN NEPAL
Tropical Zone (below 1000 M)
Sub Tropical Zone (1000 2000 M)
Temperate Zone (2000 3000 M)
Sub Alpine Zone (3000 4000 M)
Climate and Temperature
Raw Materials
Plants Yielding Vegetable Gums and Resins
Bengal Kino Gum or Palash Gum
Sal Gum
Sahanjan Gum

CHAPTER 76
MINOR FOREST PRODUCTS OF BIHAR

CHAPTER 77
INDUSTRIALLY IMPORTANT MINOR FOREST PRODUCTS OF ORISSA
Plants Used in Drug and Pharmaceutical Industry
Plants Used in Perfumery Industry
Vetiveria Zizanioides (Vetiver)
Cymbopogen Flexuosus (Lemongrass)
Hyptis Suavelens (Linn.) Poit
Plants Yielding Gums and Resins of Industrial Use
Plants Used in Vegetable Oil and Fat Industry

Madhuca Latifolia (Roxb)
Pongamia Pinnate (Linn.)
Sehleichera Elesa (Lour)
Plants Used in Food or Food colourant Industries
Bixa Orellana Linn
Plants Used in Leather Tanning Industry
Cleistanthus Collinus (Karade)
Broomgrass for Broom Industry
Kendu for Bidi Manufacturing Industry
Bamboo for Pulp in the Paper Industry
Fibre Yieldig Plants for Cordage Industry

List of Address of Machinery Suppliers

About Niir

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.