# Formulation and Process of Resins, Oleoresin, Oils, Rosin & Derivatives, Gums, Adhesive, Katha, Chemical With Other Natural Products (Forest Based)

(Gum Ghati, Guar Gum, Gum Arabic, Gum Karaya, Gum Tragacanth, Locust Bean Gum, Tamarind Gum, Rosin and Rosin Derivatives, Turpentine and its Derivatives, Tall Oil and its Derivatives, Tall Oil Products in Surface Coating, Himalayan Cerawood Oil, Tall Oil in Printing Inks, Agarwood and Oil of Agarwood, Katha Production, Lignin and its Derivatives, Minor Forest Products)

## **Introduction**

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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 cinnamon 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,

his 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 cinnamon 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.



## **Market Demand**

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The demand for the product in adhesives accounted for over USD 700 million in 2015 owing to increasing use of the compound as an ingredient for the manufacture of adhesives. In addition, rapid development of the adhesives industry in China and India is expected to translate into a growing demand for the compound over the forecast period.

The global gum rosin market is expected to reach USD 2.49 billion by 2024, Increasing demand of gum rosin owing to growth of synthetic rubber industry primarily in China is expected to drive the market growth.

The global market value of the adhesives was estimated to be about \$45.36 Billion in 2014 and is projected to reach \$59.75 Billion by 2020, growing at a CAGR of 4.72% between 2015 and 2020.

The global oleoresins market was valued at approximately USD 1.0 million in 2014 and is expected to reach approximately USD 1.65 million by 2020, growing at a CAGR of around 9% between 2015 and 2020.



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npcs

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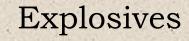
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npcs

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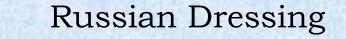


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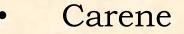


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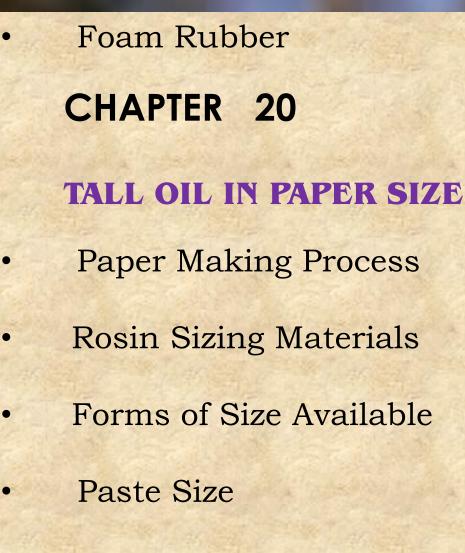
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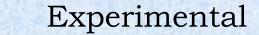


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- Kokum :(Garcinia Indica)
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#### CHEMICAL INVESTIGATION OF FATTY OIL OF BURSERA PENICILLATION SEED

Composition of the Seed Kernel Oil

## CHAPTER 49

#### ABUTILON INDICUM SEED OIL: CHARACTERISATION OF HBR REACTIVE ACIDS



#### 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

#### **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



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- 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

#### TECHNOECONOMIC EVALUATION OF ANGELICA ARCHANGELICA ROOTS AS A COMMERCIAL SOURCE OF ANGELICA OIL

- Materials and Methods
- Technoeconomic Evaluation



#### **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



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**



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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



#### 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

# 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

#### 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. Redid 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.



#### 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



#### PENCIL RAW MATERIALS IN KERALA Industry A Birds Eye View

- Specification of Wood
- Species Used and Availability
- Some Suggestions conclusion
- Conclusion



#### 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

#### **MINOR FOREST PRODUCTS OF BIHAR**



#### 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



### Tags

Gums, Manufacturing of Gums Ghati, Lignin, Gum Ghati Manufacturer, Strychnine, Adhesive, Minor Forest Products of Bihar, Production of Palmitic Acid, Palmitic Acid, Production of Palmitoleic Acid, Production of Brucine, Brucine, Process for Production of Brucine, Production of Strychnine, Strychnine Production, Minor Oilseeds, Minor Oil Seed Manufacturer, Minor Oil Seeds Process, Particle Board, Particle Board Manufacturing Process, Particleboard Formations, Particle Board Manufacture, Wood Polymer Composites Process, Wood Polymer Composite Production, Manufacturing of Wood Polymer Composite, Surface Coating Industry, Manufacture of Desi Katha, Processing of Desi Katha, Manufacture of Lignin, Production of Lignin, Process of Producing Lignin, Agarwood, Oil of Agarwood, Agarwood Manufacture, Agarwood Production, Himalayan Cedarwood Oil, Cedarwood Oil Process, Paper Making Process, Gum Arabic, Manufacture of Paper, Paper Making and Paper Manufacturing Process, Paper Production, Short Oil Baking Alkyd Fusion Process, Tall Oil Products in Surface Coating, Tall Oil, Tall Oil Production and Process, Pine Oil, Processing Production of Pine Oil, Pine Oil Manufacture, Camphor, Camphor Manufacturing, Procedure of Making Camphor, Oleoresin Processing, Manufacturing of Oleoresin, Production of Oleoresin, Adhesive Gum Manufacture, Adhesive Gum Process, Formulation and Manufacturing Process of Adhesives Gum, Production of Adhesives Gum, Salt Formation, Manufacture of Tamarind Gum, Production of Tamarind Gum, Mining Industry, Carpets Manufacturing Process, Production Process of Carpets, Carpet Production, Formulation of Gum Tragacanth, Formulation of Gum Karaya, Gum Karaya Manufacture, Formulation of Gum Arabic, Manufacturing of Gum Arabic, Arabic Gum Manufacturing, Production of Gum Arabic, Wax Emulsions Formulation, Chemical Products Manufacture, Katha Production, Process of Making Katha, Katha Manufacturing Process, How to Start Adhesive Gum Processing Industry, Paper Making Industry, Most Profitable Lignin Processing Business Ideas, Wood Polymer Composite Manufacturing Projects,



## Tags

Small Scale Paper Making Projects, Starting Oleoresin Processing Business, How to Start Agarwood Production Business, Arabic Gum Based Small Scale Industries Projects, New Small Scale Ideas in Minor Oil Seeds Processing Industry, NPCS, Niir, Process Technology Books, Business Consultancy, Business Consultant, Project Identification and Selection, Preparation of Project Profiles, Startup, Business Guidance, Business Guidance to Clients, Startup Project for Gums, Adhesives, Oils, Rosin & Derivatives, Resins, Oleoresins, Startup Project, Startup Ideas, Project for Startups, Startup Project Plan, Business Start-Up, Business Plan for Startup Business, Great Opportunity for Startup, Small Start-Up Business Project, Start-Up Business Plan for Adhesives Gums, Start Up India, Stand Up India, Resins Making Small Business Manufacturing, Modern Small and Cottage Scale Industries, Profitable Small and Cottage Scale Industries, Setting Up and Opening Your Oleoresin Business, How to Start Particle Board Manufacturing Process?, How to Start Successful Gum Tragacanth Business, Small Scale Commercial Desi Katha Making, Best Small and Cottage Scale Industries, Tamarind Gum Business, Profitable Small Scale Manufacturing, cutch and katha extraction





## Niir Project Consultancy Services (NPCS) can provide

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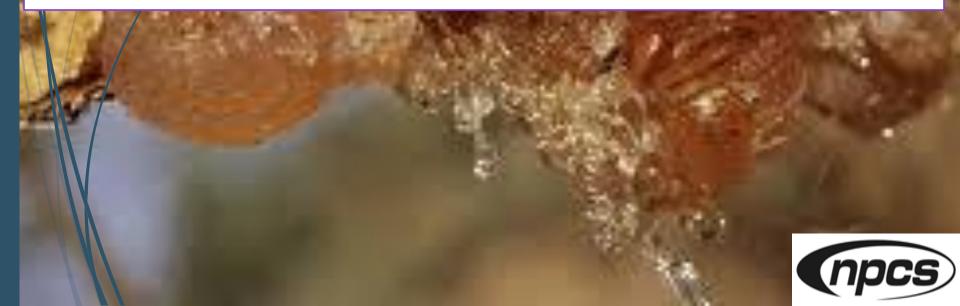
(Gum Ghati, Guar Gum, Gum Arabic, Gum Karaya, Gum Tragacanth, Locust Bean Gum, Tamarind Gum, Rosin and Rosin Derivatives, Turpentine and its Derivatives, Tall Oil and its Derivatives, Tall Oil Products in Surface Coating, Himalayan Cerawood Oil, Tall Oil in Printing Inks, Agarwood and Oil of Agarwood, Katha Production, Lignin and its Derivatives, Minor Forest Products)

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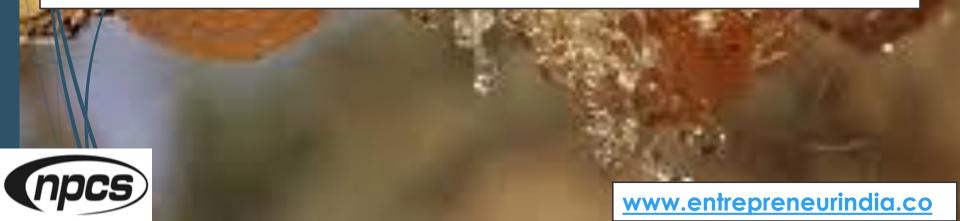
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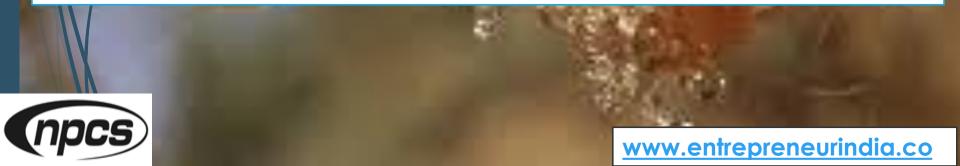


## Who are we?

- One of the leading reliable names in industrial world for providing the most comprehensive technical consulting services
- We adopt a systematic approach to provide the strong fundamental support needed for the effective delivery of services to our Clients' in India & abroad



We at NPCS want to grow with you by providing solutions scale to suit your new operations and help you reduce risk and give a high return on application investments. We have successfully achieved top-notch quality standards with a high level of customer appreciation resulting in long lasting relation and large amount of referral work through technological breakthrough and innovative concepts. A large number of our Indian, Overseas and NRI Clients have appreciated our expertise for excellence which speaks volumes about our commitment and dedication to every client's success.



We bring deep, functional expertise, but are known for our holistic perspective: we capture value across boundaries and between the silos of any organization. We have proven a multiplier effect from optimizing the sum of the parts, not just the individual pieces. We actively encourage a culture of innovation, which facilitates the development of new technologies and ensures a high quality product.



## What do we offer?

- Project Identification
- Detailed Project Reports/Pre-feasibility Reports
- Business Plan
- Industry Trends
- Market Research Reports
- Technology Books and Directory
- Databases on CD-ROM
- Laboratory Testing Services
- Turnkey Project Consultancy/Solutions
- Entrepreneur India (An Industrial Monthly Journal)



#### How are we different ?

- We have two decades long experience in project consultancy and market research field
- We empower our customers with the prerequisite know-how to take sound business decisions
- We help catalyze business growth by providing distinctive and profound market analysis
- We serve a wide array of customers, from individual entrepreneurs to Corporations and Foreign Investors
- We use authentic & reliable sources to ensure business precision



## **Our Approach**

**Requirement collection** 

Thorough analysis of the project

Economic feasibility study of the Project

Market potential survey/research

**Report Compilation** 



## Who do we serve?

- Public-sector Companies
- Corporates
- Government Undertakings
- Individual Entrepreneurs
- $\circ$  NRI's
- Foreign Investors
- Non-profit Organizations, NBFC's
- Educational Institutions
- Embassies & Consulates
- Consultancies
- Industry / trade associations



## **Sectors We Cover**

- Ayurvedic And Herbal Medicines, Herbal Cosmetics
- Alcoholic And Non Alcoholic Beverages, Drinks
- Adhesives, Industrial Adhesive, Sealants, Glues, Gum & Resin
- Activated Carbon & Activated Charcoal
- Aluminium And Aluminium Extrusion Profiles & Sections,
- Bio-fertilizers And Biotechnology
- Breakfast Snacks And Cereal Food
- O Bicycle Tyres & Tubes, Bicycle Parts, Bicycle Assembling



- Bamboo And Cane Based Projects
- Building Materials And Construction Projects
- Biodegradable & Bioplastic Based Projects
- Chemicals (Organic And Inorganic)
- Confectionery, Bakery/Baking And Other Food

- Cereal Processing
- Coconut And Coconut Based Products
- Cold Storage For Fruits & Vegetables
- Coal & Coal Byproduct



- Copper & Copper Based Projects
- Dairy/Milk Processing
- O Disinfectants, Pesticides, Insecticides, Mosquito Repellents,

- Electrical, Electronic And Computer based Projects
- Essential Oils, Oils & Fats And Allied
- Engineering Goods
- Fibre Glass & Float Glass
- Fast Moving Consumer Goods
- Food, Bakery, Agro Processing



- Fruits & Vegetables Processing
- Ferro Alloys Based Projects
- Fertilizers & Biofertilizers
- Ginger & Ginger Based Projects
- Herbs And Medicinal Cultivation And Jatropha (Biofuel)

- Hotel & Hospitability Projects
- Hospital Based Projects
- Herbal Based Projects
- Inks, Stationery And Export Industries



- Infrastructure Projects
- Jute & Jute Based Products
- Leather And Leather Based Projects
- Leisure & Entertainment Based Projects
- Livestock Farming Of Birds & Animals
- Minerals And Minerals
- *Maize Processing(Wet Milling) & Maize Based Projects*
- Medical Plastics, Disposables Plastic Syringe, Blood Bags
- Organic Farming, Neem Products Etc.



- Paints, Pigments, Varnish & Lacquer
- Paper And Paper Board, Paper Recycling Projects
- Printing Inks
- Packaging Based Projects
- Perfumes, Cosmetics And Flavours
- Power Generation Based Projects & Renewable Energy Based Projects
- Pharmaceuticals And Drugs
- Plantations, Farming And Cultivations
- Plastic Film, Plastic Waste And Plastic Compounds
- Plastic, PVC, PET, HDPE, LDPE Etc.



- Potato And Potato Based Projects
- Printing And Packaging
- *Real Estate, Leisure And Hospitality*
- Rubber And Rubber Products
- Soaps And Detergents
- Stationary Products
- Spices And Snacks Food
- Steel & Steel Products
- Textile Auxiliary And Chemicals



- Township & Residential Complex
- Textiles And Readymade Garments
- Waste Management & Recycling
- Wood & Wood Products
- Water Industry(Packaged Drinking Water & Mineral Water)
- 0 Wire & Cable



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