

# **Synthetic Resins, Surface Coating, Paints, Varnishes & Lacquers, Gums, Adhesives & Sealants, Rosin & Derivatives, Resins, Oleoresins Formulation and Technology**

[Gums, Adhesives & Sealants Technology \(with Formulae & their Applications\) 2nd Edition](#)

**Author:** NIIR Board

**Format:** Paperback

**Book Code:** NI8

**Pages:** 700

**ISBN:** 9788178330952

**Price:** Rs. 1,475.00 **US\$** 150.00



Naturally occurring polysaccharides from plant exudates have been in use from many decades in immense quantities. Natural gums are natural polymers, which mainly consists of carbohydrates sometimes with small amounts of proteins and minerals. Gum and its derivatives are widely used in various industries as per its needs. The appearance and properties of natural gums determine their commercial value and end use. Due to their extraordinary, unrivalled technological & functional properties gum is used in many industries. Gums not only modify viscosity and consistency, they also often attenuate odour, taste and flavour intensity. Adhesive or sealant is a mixture in a liquid or semi-liquid state that is capable of holding materials together by surface attachment. Adhesives and sealants are used as a raw material for the manufacturing industry or for the service of different processing industries. Adhesives and sealants virtually touch every part of our lives. The adhesives and sealants are two chemically similar but functionally different groups of formulated products. There is no end in sight to the new materials, new formulation, and new uses to which adhesives and sealants will be put in the future. Some of the fundamentals of the book are advantages of adhesive bonding, hybrids and coupling agents, adhesive films, designing polymers for adhesives, fundamentals of adhesion, designing polymers for adhesives, thermodynamics of adhesion, casein and mixed protein adhesives, lime-free casein adhesives, foil to paper laminating adhesives, casein and protein blend glues as wood adhesives, chemistry of protein blend glues, natural rubber adhesives, vulcanizing latex adhesives, solution adhesives from natural rubber, halogenated butyl rubber, butyl rubber and poly isobutylene lattices, polysulfide sealants and adhesives etc. This book covers a wide range of polymeric adhesives and sealants, gums along with their essential formularies, distinguished by applications and based on technology. The main areas covered in details are the basic fundamentals, properties, uses and applications, formulations and chemistry, methods of manufacturing and lastly testing methods. This book will be very resourceful to its readers who are just beginners in this field and also to upcoming entrepreneurs, engineers, existing industries, technologist, technical institution etc.

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## [Manufacture of Paint, Varnish & Allied Products \(2nd Revised Edition\)](#)

**Author:** NPCS Board

**Format:** Hardcover

**Book Code:** NI25

**Pages:** 132

**ISBN:** 9789381039175

**Price:** Rs. 1,495.00 **US\$** 150.00

\*\*\*\*\*Limited Edition- available in Photostat Version Only\*\*\*\*\* Paint is any liquid, liquefiable, or mastic composition that, after application to a substrate in a thin layer, converts to a solid film. It is most commonly used to protect, color, or provide texture to objects. Paint can be made or purchased in many colors—and in many different types, such as watercolor, artificial, etc. Paint is typically stored, sold, and applied as a liquid, but dries into a solid. Varnish is a transparent, hard, protective finish or film primarily used in wood finishing but also for other materials. Varnish is traditionally a combination of a drying oil, a resin, and a thinner or solvent. Varnish finishes are usually glossy but may be designed to produce satin or semi-gloss sheens by the addition of "flattening" agents. Varnish has little or no color, is transparent, and has no added pigment, as opposed to paints or wood stains, which contain pigment and generally range from opaque to translucent. The technology of paints, varnishes and allied products is changing rapidly and becoming more complex each day. The paint industry is an important segment of the chemical industry. Paint technology utilizes the science of chemistry, physics and engineering. The paint industry is broadly classified into decorative and industrial segment. Decorative paints consist 70% of market. Paints, varnishes, and allied product industry is gaining ground at a rapid pace in modern time accompanied with closed advance in surface coating technology. They are formulated for specific purposes like outside house paints and exterior varnishes are intended to give good service when exposed to weathering; interior wall paints are formulated to give excellent coverage. The Rs 40,600-crore Indian paint industry is likely to see a 20 per cent compounded annual growth rate until 2016. The industry will reach the level of Rs 62,000 crore in the next two years. The rural market grew 20 per cent. Rural India's incremental consumption expenditure is growing well. And, the rural sector has a major share of the decorative paints segment. In FY14, per capita consumption of paint increased to a little over four kg, of which the decorative segment contributed 73 per cent at Rs 29,638 crore. The remaining Rs 10,962 crore was contributed by the industrial segment. The unorganized sector has around 35 per cent of the paint market. In the unorganized segment, there are about 2,500 units. The future for industrial paints, varnishes and allied product is bright. The content of the book includes information about Paint, Varnish & Allied Products. The major contents of this book are project profiles of projects like Paint industry in India, Acrylic emulsion paints, Aluminium Paint, Cement Paint, Industrial paint, N.C. Thinner, Oil Based Paint, Paint Additives, Red Oxide Paint, Stoving Paint, insulating Varnishes etc. Project profile contains information like properties, B.I.S specification, market survey, manufacturing process, suppliers of raw material, process flow diagram, plant economics, land and building, plant and machinery, fixed capital, working capital requirement/month, total working capital/month, cost of project, total capital investment, turn over/annum, profit sales ratio, rate of return, breakeven point (B.E.P). This book is very useful for new entrepreneurs, technical institutions, existing units and technocrats.





**Author:** NIIR Board

**Format:** Paperback

**Book Code:** NI41

**Pages:** 600

**ISBN:** 817833061X

**Price:** Rs. 1,275.00 **US\$** 125.00



Adhesives surround us in nature and in our daily lives. Adhesive, or glue, is a mixture in a liquid or semi liquid state that is capable of holding materials together by surface attachment. An adhesive is a compound that adheres or bonds two items together so as to form a single unit. Adhesives may come from either natural or synthetic sources. Adhesives and sealants virtually touch every part of our lives. Some modern adhesives are extremely strong, and are becoming increasingly important in modern construction and industry. A large and growing number of adhesives are available in the market. Adhesives for this growing market range from the simplest glues and mucilages for furniture making and repair, to metal to metal bonding for frame construction. There is no end in sight to the new materials, new formulation, and new uses to which adhesives will be put in the future. Formulations generally are compounded to satisfy a special need or needs. Therefore, uniformity of neither product nor end use exists. Applicators of different adhesives are designed according to the adhesive being used and the size of the area to which the adhesive will be applied. The adhesive is applied to either one or both of the materials being bonded. The pieces are aligned and pressure is added to aid in adhesion and rid the bond of air bubbles. Adhesives are of great use across innumerable industrial and commercial applications. Some of the fundamentals of the book are water based industrial type adhesives, home construction and related adhesives, water based wallpaper adhesive, fabric adhesives, water based adhesive for bonding non woven fabric to non woven fabric by knife coating, film adhesives, water based food packing adhesive for bonding, flocking adhesives, foam adhesives, water based adhesive for bonding urethane, industrial adhesives, bag seam and bottom paste adhesives, solid fiber, fiberboard and corrugated board adhesives, packaging adhesives etc. This indispensable book contains numerous essential adhesive formularies distinguished by application. This book will be an invaluable resource to its readers, upcoming entrepreneurs, scientists, existing industries, technical institutions, etc.

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[\*\*The Complete Book on Resins \(Alkyd, Amino, Phenolic, Polyurethane Epoxy, Silicone, Acrylic\), Paints, Varnishes, Pigments & Additives \(Surface Coating Products with Formulae\)\*\*](#)

**Author:** NIIR Board of Consultants & Engineers

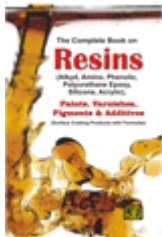
**Format:** Paperback

**Book Code:** NI64

**Pages:** 624

**ISBN:** 9788178331652

**Price:** Rs. 1,875.00 **US\$** 150.00



Surface coating is the application of decorative or protective materials in liquid or powder form to substrates. These coatings normally include general solvent type paints, varnishes, lacquers, and water thinned paints. Surface coating involves different types of products for example paints, varnishes, resins, polyesters, pigments etc. Alkyd resin is complex oil modified polyester that serves as the film coating agent in some paints and clear coatings. Varnish is one of the important parts of surface coating industry. They are used as clear, transparent coatings or as vehicles for a wide variety of pigmented, opaque coatings for architectural and industrial purposes. India's strong economic growth has propelled the paint industry to double digit growth over the past few years and has made it Asia Pacific fastest growing paint market. The spurt in the economic growth over the past few years has caused a tremendous increase in the size of the industry. The field of surface coatings is now so extensive, and is developing rapidly. This handbook covers all aspects of coating technology including composition, preparation, application, manufacturing process and photographs of plant & machinery with supplier's contact details. The major contents of the book are oleoresinous media, varnishes: composition, manufacture & use, alkyd resin technology, manufacture of alkyd resins, polyesters, amino resins, phenolic resins, polyurethane resins, epoxy resins, silicone resins, acrylic solution resins, emulsion polymerization theory, emulsion polymers, water reducible resins, water soluble polymers, solvents, inorganic pigments, titanium dioxide pigments, organic pigments, paint driers and architectural paints etc. It will be a standard reference book for professionals, entrepreneurs, food technologists, those studying and researching in this important area and others interested in the field of resins, paints, varnishes, pigments & additive industry.

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## [Modern Technology of Paints, Varnishes & Lacquers \(2nd Edition\)](#)

**Author:** NIIR Board

**Format:** Paperback

**Book Code:** NI66

**Pages:** 682

**ISBN:** 8178330881

**Price:** Rs. 1,075.00 US\$ 125.00



Surface coating industry is one of the most popular industries. Paints, varnishes and lacquers industry is gaining ground at a rapid pace in modern time accompanied with closed advance in surface coating technology. They are formulated for specific purposes: outside house paints and exterior varnishes are intended to give good service when exposed to weathering; interior wall paints are formulated to give excellent coverage and good wash ability; and lacquers are formulated for rapid drying. Varnish is one of the important parts of surface coating industry. Varnish is a transparent, hard, protective finish or film primarily used in wood finishing but also for other materials. They are used to change the surface gloss, making the surface more matte or higher gloss, or to provide the various areas of a painting with a more unified finish. Varnishes are also applied over wood stains as a final step to achieve a film for gloss and protection. Some products are marketed as a combined stain and varnish. Paint is any liquid, liquefiable, or mastic composition which after application to a substrate in a thin layer is converted to an opaque solid film. It is most commonly used to protect, colour or provide texture to objects. The paint industry volume in India has been growing at 15% per annum for quite some years now. As far as the future growth prospects are concerned, the industry is expected to grow at 12 to 13% annually over the next five years. The technology is required to produce different type of new paints and varnishes based on different type of uses. The paint and coatings industry plays an integral role in sustainability; coatings protect the objects we depend on every day, preserve our possessions, so they last longer and provide for a sustainable future. They are indispensable products that extend the useful life of everyday objects by acting as a protective barrier. These newer products have enabled paint manufacturers to improve the performance properties of their paints and coatings and so satisfy the more stringent requirements of our modern industrial society. The future for industrial paints, varnishes and lacquers is bright. In the next few years its value will go up gradually in line with the global trend. The major contents of the book are application of paints, fundamentals of paint, varnishes and lacquers, manufacturing of different type of paints, paint formulation, pigment dispersion, emulsion paints, and so on. The book deals with fundamentals of paints, Varnishes and lacquers, pigments, Oils used in paints and varnishes, solvents, dryers, plasticizers, additives for surface coating, various types of paint manufacturing etc. The book is very useful for new entrepreneurs, existing units, technocrats, technical institutions and for those who wants to diversify in the field of paints manufacturing.

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## [Modern Technology of Synthetic Resins & Their Applications](#)

**Author:** NIIR Board

**Format:** Paperback

**Book Code:** NI71

**Pages:** 660

**ISBN:** 817833092X

**Price:** Rs. 975.00 US\$ 100.00



Synthetic resin is typically manufactured using a chemical polymerization process. This process then results in the creation of polymers that are more stable and homogeneous than naturally occurring resin. Since they are more stable and are cheaper, various forms of synthetic resin are used in a variety of products such as plastics, paints, varnishes, and textiles. There are various kinds of synthetic resins; acetal resins, amino resins, casein resins, epoxy resins, emulsion polymers, hydrocarbon resins, polyamide resins, polyesters rubber resins etc. The classic variety is epoxy resin, manufactured through polymerization, used as a thermoset polymer for adhesives and composites. Epoxy resin is two times stronger than concrete, seamless and waterproof. Polyamide resin is another example of synthetic resins. Polyamide resins are products of polymerization of an amino acid or the condensation of a diamine with a dicarboxylic acid. They are used for fibers, bristles, bearings, gears, molded objects, coatings, and adhesives. The term nylon formerly referred specifically to synthetic polyamides as a class. Because of many applications in mechanical engineering, nylons are considered engineering plastics. Resins are valued for their chemical properties and associated uses, such as the production of varnishes, adhesives, lacquers, paints, rubber and pharmaceutical uses. The applications of synthetic resins are seen in some important industries like paint industry, adhesive industry, the printing ink industry, the textile industry, the leather industry, the floor polish, paper, agricultural industry etc. As it can be seen that there is an enormous scope of application of resins hence it is one of the major field to venture. The major contents of the book are properties, manufacturing process, formulae of synthetic resins and applications of synthetic resins, manufacture of emulsion polymers, polyesters, derivatives of resins, use of resins in polymer field, alkyd resin technology, epoxy resins, application of emulsion polymers, manufacture of polystyrene based ion-exchange, phenol formaldehyde reactions, polycarbonates resins, polyester coating compositions, synthetic rubbers, modification with synthetic resins, water-soluble polymers, cross-linking of water-soluble coatings etc. This book also contains the list of manufacturers and dealers of raw materials, list of chemical plant and equipment manufacturers and so on in the directory section. The book is very useful for new entrepreneurs, manufacturers of synthetic resins who can easily extract the relevant formulation and manufacturing process from the book.

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## [Handbook on Speciality Gums, Adhesives , Oils, Rosin & Derivatives, Resins, Oleoresins, Katha, Chemicals with other Natural Products](#)



**Author:** H.Panda

**Format:** Paperback

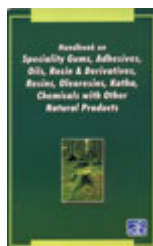
**Book Code:** NI149

**Pages:** 834

**ISBN:** 8178330253

**Price:** Rs. 1,275.00 US\$ 125.00

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.

# [Synthetic Resins Technology Handbook](#)

**Author:** NIIR Board of Consultants & Engineers

**Format:** Paperback

**Book Code:** NI150

**Pages:** 588

**ISBN:** 8178330261

**Price:** Rs. 1,100.00 **US\$** 125.00



Synthetic resin is typically manufactured using a chemical polymerization process. This process then results in the creation of polymers that are more stable and homogeneous than naturally occurring resin. Since they are more stable and are cheaper, various forms of synthetic resin are used in a variety of products such as plastics, paints, varnishes, and textiles. There are various kinds of synthetic resins; acetal resins, amino resins, phenolic resins, epoxy resins, fufuryl alcohol: resins, fluorocarbon resins, polyurethane resins, etc. Resins are polymeric compound which are available in nature and are also manufactured by synthetic routes. Some resins are also manufactured by partial modification of natural precursor polymer by chemical. The classic variety is epoxy resin, manufactured through polymerization, used as a thermoset polymer for adhesives and composites. Epoxy resin is two times stronger than concrete, seamless and waterproof. Various thermoplastic thermosetting polymers, including elastomers, have been incorporated to modify the properties for the cured epoxy resin products. Elastomers provide greater elongation and impact strength. Polysulfides, the most commonly used elastomer to flexibilise epoxy resins. Heat resistant polymers are employed for the various uses; heat flame resistant fibers plus ultra high strength, high modulus fibers; films, laminating varnishes and wire enamels; structural adhesives and molding powders. The Synthetic Resin Manufacturing industry initially enjoyed strong growth over its earlier history as plastics began to increasingly replace traditional materials such as wood, leather and metal. Plastic is estimated to have been the most used material globally. The book basically deals with new raw materials for cost reduction of alkyds and unsaturated polyester, amino resins, polyester based resins, enzymatic synthesis of phenolic copolymers, radiation curable hybrid formulation, self polishing anti fouling, epoxy resins, epoxy resins from methyl epichlorohydrin, fillers, reinforcements, and other additives, cardanol modified epoxy resins, baking coatings from epoxy derived from cardanol, phenolic resins, polyurethane resins, aqueous polyurethane dispersion technology, heat resistant resins, etc. The resin have wide industrial uses like in lacquers, paints, textiles, varnishes, printing inks and cosmetic etc. this book contains formulae, processes and applications of various resins. This book will be very resourceful to new entrepreneurs, consultants, technical institutions, libraries and for those who wants to venture into this field.

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## [The Complete Technology Book on Synthetic Resins with Formulae & Processes](#)

**Author:** NIIR Board of Consultants & Engineers

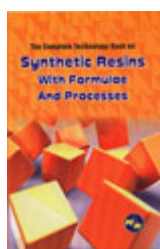
**Format:** Paperback

**Book Code:** NI151

**Pages:** 512

**ISBN:** 818662399X

**Price:** Rs. 1,150.00 **US\$** 125.00



Synthetic resin is typically manufactured using a chemical polymerization process. This process then results in the creation of polymers that are more stable and homogeneous than naturally occurring resin. Since they are more stable and are cheaper, various forms of synthetic resin are used in a variety of products such as plastics, paints, varnishes, and textiles. There are various kinds of synthetic resins; silicones resins, polyvinyl pyrrolidone, gum arabic, epoxy resins, guar gum, carrageenan, carboxymethyl cellulose, etc. Resins are polymeric compound which are available in nature and are also manufactured by synthetic routes. Some resins are also manufactured by partial modification of natural precursor polymer by chemical. Silicones are unique among the commercially important polymers both in chemistry and in variety of industrial applications. Silicones can be applied as high temperature insulating varnishes, impregnates to be used with glass, asbestos, mica products and encapsulating agents for electrical components. Water borne dispersions or emulsions, for example emulsions of vinyl or acrylic copolymers are popular in decorative coatings. The applications of synthetic resins are seen in some important industries like paint industry, adhesive industry, the textile industry, paper, paint, agricultural industry, petroleum industry etc. As it can be seen that there is an enormous scope of application of resins hence it is one of the major field to venture. Some of the fundamentals of the book are electrodepositable pigmented coating compositions based on alkyd resins, phosphorus containing allyl resins, vapour permeation cure technology, characterization of water soluble anodic electrodepositive pigmented coating compositions, protection of concrete substrates, zinc rich coatings, electro deposition primers, developments in thermosetting powder coatings, application of powder coatings, polyethylene glycol, petroleum recovery and processing, industries using polyethylene glycols, silicones resins, preparation & formulation of silicone resin based coatings, pigments and dyes etc. Synthetic Resins are used by lot of industries. Yet, little emphasis has been placed on the comparative value on functionality of polymeric material as a class. These resins have been classified in separate categories, usually in terms of their Chemistry, sources or end uses. The present book contains formulae, processes and other valuable details for various synthetic resins. This is very useful book for those concerned with development, consultants, research scholars, new entrepreneurs existing units, institutional libraries etc.

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

**Author:** NPCS Board of Consultants & Engineers

**Format:** Paperback

**Book Code:** NI185

**Pages:** 616

**ISBN:** 9788178331614

**Price: Rs. 1,675.00 US\$ 150.00**



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.

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## [Selected Formulary Book on Inks, Paints, Lacquers, Varnishes and Enamels](#)

**Author:** NPCS Board of Consultants & Engineers

**Format:** Paperback

**Book Code:** NI192

**Pages:** 568

**ISBN:** 9788190439855

**Price:** Rs. 1,475.00 **US\$** 150.00



A formula is an entity constructed using the symbols and formation rules of a given logical language. In science, a specific formula is a concise way of expressing information symbolically as in a mathematical or chemical formula. Formulation is a key process in the overall life cycle so that products are delivered that is of the right quality, at a competitive cost, and is made available within the specified time scale. The chemical formula identifies each constituent element by its chemical symbol and indicates the number of atoms of each element found in each discrete molecule of that compound. If a molecule contains more than one atom of a particular element, this quantity is indicated using a subscript after the chemical symbol and also can be combined by more chemical elements. It is all in the formula, whose implications also remain undiscovered by modern economists. It plays a major role in every process whether it is manufacturing process or preservation. There is a big importance of formula in our life because formulas and equations deal with everyday things like shapes, investments, mixing things, movement, lighting, travel and a host of other things they provide information you can use in planning activities. This book basically deals with inks and marking inks, inks for stamp pads, inks for hand stamps, color stamps for rough paper, indelible hand stamp ink, white stamping ink for embroidery, stencil inks, blue stencil inks, indelible stencil inks, sympathetic inks, typewriter ribbon inks, coloring agents, writing inks, how to decorate furniture, novelties, furniture lacquer enamels, white lacquer enamel, egg shell white enamel, high gloss white enamel, colors for furniture spraying, furniture lacquer formulas., enamels and industrial varnishes, general purposes varnish, spar and boat varnish, exterior varnish, varnish for outside work, spar and yacht varnish, quick drying interior varnish, crystal varnish (indoor), hard varnish for floors, colored linseed oil floor dressing, wrinkle finish varnish, brewers pitch and keg varnishes, undercoat varnish, quick drying varnish mastic varnish etc. This book present several hundred advanced product formulations for household, industrial and other applications. This book will be of help to development chemists looking for leads in the formulation of a wide range of products.

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## [Phenolic Resins Technology Handbook](#)

**Author:** NPCS Board of Consultants & Engineers

**Format:** Paperback

**Book Code:** NI197

**Pages:** 584

**ISBN:** 9788190568500

**Price:** Rs. 1,275.00 US\$ 125.00



Phenolic resins are obtained by the reaction of phenols with aldehydes. The simplest representative of these types of compounds, phenol and formaldehyde, are by far most important. Phenolic resins are mainly used in the production of circuit boards. The development of synthetic resins for surface coating applications has usually followed the use of similar material in the plastic industry. One of the first synthetic resins ever used commercially, both in plastics and in surface coatings was the phenolic resin. Phenolic resins result aldehyde with or without modification. Phenol resin bonded wood materials; particle boards (PB), plywood, fiber board (FB) and glued wood construction element are used for outdoor construction and in high humidity areas because of the high water and weathering resistance of the phenolic adhesive bond and high specific strength. The competitiveness and development of the wood working industry are of utmost importance for the development for thermosetting plastics. This industry is the largest consumer of urea melamine and phenol resins. Phenolic laminates are made by impregnating one or more layers of a base material such as paper, fiberglass or cotton with phenolic resin and laminating the resin saturated base material under heat and pressure. The resin fully polymerizes (cures) during this process. The base material choice depends on the intended application of the finished product. Paper phenolics are used in manufacturing electrical components such as punch through boards and household laminates. Glass phenolics are particularly well suited for use in the high speed bearing market. Other applications of phenolic resins are in chemical equipments, fibers, socket putties, photo resists, tannins, brush putties, etc. Good performance at a reasonable cost has long been an important selling point for phenolic resins, especially in applications such as wood bonding and insulation, where discoloring and other drawbacks can be overlooked because of cost savings. Hence demand of phenolic resins is growing rapidly. This book basically deals with general reaction of phenols with aldehydes, the resoles, curing stages of resoles, kinetics of a stage reaction, chemistry of curing reactions, kinetics of the curing reaction, the novolacs, decomposition products of resites, acid cured resites, composition of technical resites, mechanisms of rubber vulcanization with phenolic resins, thermosetting alloy adhesives, vinyl phenolic structural adhesives, nitrile phenolic structural adhesives, phenolic resins in contact adhesives, chloroprene phenolic contact adhesives, nitrile phenolic contact adhesives, phenolic resins in pressure sensitive adhesives, rubber reinforcing resins, resorcinol formaldehyde latex systems etc. The present book covers manufacturing processes of phenolic resins. New entrepreneurs, technocrats, research scholars can get good knowledge from this book.

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## [Surface Coating Technology Handbook](#)

**Author:** NPCS Board of Consultants & Engineers

**Format:** Paperback

**Book Code:** NI216

**Pages:** 680

**ISBN:** 9788178331188

**Price:** Rs. 1,475.00 US\$ 125.00

Surface Coating is in use since long back is rapidly increasing with the development of civilization. There has been considerable impact in this field. Surface coating technology specializes in finding out engineering solutions to all the critical production problems related to coating the products on a continuous and consistent basis in your production plant. Surface coating can be defined as a process in which a substance is applied to other materials to change the surface properties, such as colour, gloss, resistance to wear or chemical attack, or permeability, without changing the bulk properties. Production of surface coating by any method depends primarily on two factors: the cohesion between the film forming substances and the adhesion between the film and the substrate. The development of science and technology revolutionized the surface coating industry in the progressive countries of the world. Surface coating technology involves the use of various types of products such as resins, oils, pigments, polymers, varnishes, plasticizers, emulsions, etc. We have completely replaced costly petroleum solvents with water and we get cheaper finished products with no evaporation loss and fire hazards. Paint is any liquid, liquefiable, or mastic composition which after application to a substrate in a thin layer is converted to an opaque solid film. It is most commonly used to protect, colour or provide texture to objects. The paint industry volume in India has been growing at 15% per annum for quite some years now. Varnish is one of the important parts of surface coating industry. They are used to change the surface gloss, making the surface more matte or higher gloss, or to provide the various areas of a painting with a more unified finish. Plasticizer plays an important role in the formation of polyvinylchloride (PVC). It is also used to plasticize the polymers. Polymers are divided into three different types; linear polymers, branched polymers and cross linked polymers. Polymer Energy system is an award winning, innovative, proprietary process to convert waste plastics into renewable energy. On the basis of value added, Indian share of plastic products industry is about 0.5% of national GDP. This book basically deals with principles of film formation, evaporation of solvent from a solution, chemistry and properties of drying and other oils, glyceride structure and film formation, the size of polymer molecules, processing of oil and resin, inorganic pigments, classification by chemical constitution, azo pigments, organic pigments in architectural (decorative), organic pigments in industrial finishes, solvent requirements of specific resins convertible systems, molecular structure of polymer plasticiser systems, properties of plasticised polymers, surface active agents, optical properties, rheological characteristics, emulsions and other aqueous media, formation of polymer emulsions, modern methods of analysis etc. The book presents a concise, but through an overview of state of technology for surface coating. This is organized into different chapters like principal of film formation, chemistry and properties of drying and other oils, processing of oil and resin, organic pigment, solvents, plasticizer, surface active agent, surface preparations etc. This book is an invaluable resource to technocrats; new entrepreneurs, research scholars and others concerned to this field.



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## [Alkyd Resins Technology Handbook](#)





**Author:** H.Panda

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Alkyd resins are any of a large group of thermoplastic resins that are essentially polyesters made by heating polyhydric alcohol with polybasic acids or their anhydride and used chiefly in making protective coatings and good weathering properties. These resins are useful as film forming agents in paint, varnished and enamels & as thermosetting plastics that can be moulded into solid objects. Hence, alkyd resins are one of the important ingredients in the synthetic paint industry. Alkyd resins are the synthetic resins which have a dominant position among the synthetic resins with respect of production volume & the frequency of the use in paint & varnish materials. Despite the growing popularity of acrylic, polyurethane and epoxy resins, alkyd resins remain highly favoured among paint producers for its variability of compositions & better value for money. Originally, alkyd resins were merely the reaction products of phthalic anhydride and glycerine. But these products were too brittle to make satisfactory coatings. The use of oils or unsaturated fatty acids in combination with the brittle alkyds resulted in the air-drying coatings which revolutionized the chemical coating industry. The oil or fatty acid portion of the alkyd is one of the factors which determine the paint formulator's choice of resin to be used. In general, the lower the phthalic content of an alkyd, the higher the amount of oil used. Alkyd resins products are suitable for wide range of products with application in decorative, maintenance and contractor paints where excellent gloss and good durability are required. Experts believe that the total consumption of paint & varnish materials will rise to a great extent in the coming years. Both cost wise & performance wise, alkyds have proven themselves over a wide swath of demands, from agriculture/construction equipment to general industrial metal and even architectural finishes. Some of the fundamentals of the book are the basic chemistry of unsaturated polyesters, factors affecting alkyd production, monitoring the alkyd reactions, alkyd calculations, alkyd formulations based on theory, practical alkyd formulations, assessment of the performance of single and multicoat red iron oxide alkyd paint systems, styrenated alkyd resins based on maleopimaric acid, mechanical properties of alkyds resin varnish films and the effect of different weathering conditions on them, modification of alkyds, copolymerization of alkyd silicon for coatings, styrene copolymers in alkyd resins, etc. This book contains alkyd formulation, modification of alkyds, styrene copolymers in alkyd resins, copolymerization of alkyd silicon, polyblends of polystyrene glycol and alkyd in surface coatings, alkyd calculations, and alkyd nomograms. This book will find very helpful to all its readers, entrepreneurs, scientists, technical institution, existing industries, paint technologist etc.

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**NIIR PROJECT CONSULTANCY SERVICES** , 106-E, Kamla Nagar, New Delhi-110007, India. **Email:** [npcs.india@gmail.com](mailto:npcs.india@gmail.com) **Website:** [NIIR.org](http://NIIR.org)

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