

# Phenolic Resins Technology Handbook



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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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