Manufacturing of Synthetic Resins with Formulation
Introduction

Synthetic resins are materials with a property of interest that is similar to natural plant resins: they are viscous liquids that are capable of hardening permanently. Otherwise, chemically they are very different from the various resinous compounds secreted by plants. Synthetic resins comprise a large class of synthetic products that have some of the physical properties of natural resins but are different chemically. Synthetic resins are not clearly differentiated from plastics.
In modern industry natural resins have been almost entirely replaced by synthetic resins, which are divided into two classes, thermoplastic resins, which remain plastic after heat treatment, and thermosetting resins, which become insoluble and infusible on heating. Thermoplastic resin softens repeatedly by heating. Thermosetting resin, on the other hand, hardens only once when heated. Thermoplastics produced by the local industry include Polystyrene (PS), Polyvinyl Chloride (PVC), Alkyds and Polyester Fiber, while those of thermosetting resins include Phthalic Anhydride, Aluminum Paste Resin, Adhesive Resin, Acrylic Resin Urea- and Phenol-Formaldehyde, and Colored Pellets.
Thermosetting and thermoplastic resins respectively fall under two broad industrial categories. Thermosetting resins fall under the surface coating branch of the chemicals industry. Thermoplastic resins fall under plastic and plastic-based products. The surface coating chemicals branch includes the manufacture of paint, adhesives, printing ink, and specialty resins of the thermosetting type.

Synthetic resins required pigments to be grinded, which provides excellent transparency and pigment wetting. The pigment concentrate must be let down with a synthetic resin that will provide the finished ink or coating attributes.
These attributes may require a synthetic resin to have water resistance, alkali resistance and solvent resistance, as well as adhesion to the designated substrate.

Thermoplastic and thermosetting resins are used in industrial, consumer, and agricultural products. Resins are used by downstream industries such as those manufacturing plastic products, paints, and adhesives. Also included in the synthetic resin industry are compounders that blend basic resins with additives to produce concentrates and compounds for use by these same downstream industries.
The most commonly used type of synthetic resin is epoxy resin. This stuff is made through polymerization and polycondensation reactions. They are used as a thermoset polymer that is used for adhesives. Epoxy resins are extremely strong. It is even stronger than concrete, while also remaining waterproof.

Acetal resin is another synthetic resin. When compared to other similar resins, one can see the simple chain structure. This resin is used to make parts that have a high stiffness, low friction, and amazing dimensional stability.
Acrylic resins, manufactured by the polymerization of acrylates or methacrylates, find use in several applications ranging from paints and coatings to automotive and construction. Demand for acrylic resins is dependent on the health of the economy and dynamics in various end-use and downstream markets such as paints and coatings, textiles, paper and adhesives in addition to detergents, personal care products, superabsorbent polymers, and wastewater treatment chemicals, among others.
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