Polystyrene

Thermo polymer

A synthetic aromatic polymer made from the monomer styrene which can be solid or foamed. The raw materials to make styrene are obtained from crude oil. A range of processes such as distillation, steam-cracking and dehydration are required to transform the crude oil into styrene. At the end polystyrene is produced by polymerising styrene.

From refrigerators and air conditioners, to ovens and microwaves, from hand-held vacuum cleaners to blenders, this material can be found all over. The resins are safe and cost effective, with excellent appearance and functionality mainly due to easy-processing. Almost 26% of the demand is used in injection-molding, extrusion and thermoforming.

Epoxy Resin

Thermosetting polymer

Thermosetting polymers with unique mechanical and resistance properties. They are the result of a chemical reaction called 'curing', which involves other chemicals more commonly known as 'hardeners' or curing agents.

Used as structural or engineering adhesives used in the construction of aircrafts, automobiles, boats and other such applications. These are an integral part of the electronic industry and used in over-molding transistors, integrated circuits, PCB's, and hybrid circuits.

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Acrylic

Thermo polymer

There are many forms of this type of polymer, the most common polymethyl methacrylate (PMMA), which is sold under the brand names of Plexiglas, Lucite, Perspex and Crystallite. These polymers are formed by reacting a monomer, such as methyl methacrylate, with a catalyst. Both are poured into a mold where the reaction takes place.

The most common use is as an alternative to glass. Often called safety glass, it can be used in greenhouses, fish tanks or aquariums. The medical industry makes use of its properties because the compounds are great for medical devices or parts of equipment. It is also used for sun visors, footwear, hosing, packaging, and piping.

Urea-Formaldehyde

Thermosetting polymer

Made by the condensation of formaldehyde and urea in an aqueous solution. The condensation reaction gives a colourless, syrupy solution that can be spray-dried to a powder. It can also be mixed with cellulose filler to produce powders for molding into solid objects. Under the influence of heat and pressure the resin is cured to its final state.

This material is commonly used when producing the casing for electrical appliances and plugs. Other uses include decorative laminates, textiles, paper, foundry sand molds, wrinkle resistant fabrics, cotton blends, rayon, corduroy, etc.. It is also used in the manufacture of MDF and plywood to glue the particles or ply's together.

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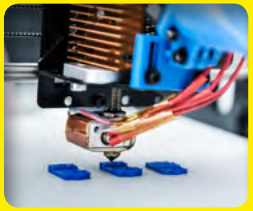
PLA

Biodegradable

Polylactic acid is a biodegradable thermoplastic aliphatic polyester derived from renewable resources, such as corn starch, tapioca roots, chips (or starch), or sugarcane. In 2010, this thermoplastic had the second highest consumption volume of any bio-plastic of the world.

This material can be processed by extrusion, injection molding, film and sheet casting, 3d printing, and spinning, providing access to a wide range of materials. It is used as medical implants in the form of anchors, screws, plates, pins, rods and as a mesh. It is useful for producing loose-fill packaging, compost bags, food packaging and disposable tableware.



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