Epoxy Pro Guide – That's Resin Enough for Me

Epoxy Resin. That wondrous material that starts out as a viscous liquid and transforms into a versatile solid. Used in so many craft projects and DIY/ "honey-do" tasks; epoxy resin has become a reliable creative and practical tool for artisans, craftspeople and handymen – to tackle everything from artistic creations to home and office repairs and maintenance.

In this guide, we'll highlight some of the more common types of resin, their characteristics and uses, as well as their pros and cons.

Main Types of Resin

While certainly our focal point, epoxy resin is not however, the only type of resin in common use today. Depending upon which resource you choose; there are a handful of main resin types mentioned – as well as many other resins formulated for specific niches. We'll focus on four main resin types here:

- ***Epoxy***
- ***Polyester***
- ***Polyurethane***
- ***Silicone***

The majority of resins are two-part compounds consisting of resin and hardener. Applications processes will vary depending upon the project and desired results. When several layers are needed, curing or drying between coats is required. Additional layers may be applied when the previous coat is still tacky, or if fully cured, light sanding is recommended to assure a strong adhesion.

Epoxy Resin

Epoxy Resin River Desk by 1728 Designs

Thermosetting epoxy resins, whereby the curing process generates heat, are one of the best all-purpose materials providing superior bonding, coating and sealing. Frequently used for creating and sealing art and craft projects and building furnishings as well as many household repairs and maintenance; this polymer dries to a clear solid finish that may be tinted during application or sanded and painted – just like wood.

Pros - easy to apply, long-lasting, impact & moisture resistant
Cons – should be used in a controlled environment - room temperature of 75-85 degrees F and humidity levels of 70% or less for optimal results, may yellow over time in sunlight however UV-resistant epoxy resins are available (see Art Resin)

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Polyester Resin

Also known as fiberglass resin, polyester resin is often used in commercial industries for marine and construction applications due to their low cost and resistance to heat, chemicals water and flame. Polyester resin's fibrous structure also provides flexibility and strength.

Pros – low cost, variable curing time, water resistance
Cons – pungent smell, more technical & therefore difficult mixing process

Polyurethane Resin

Polyurethane resins are generally "out of sight resins" used for insulation and adhesives - as foam liners in the textile industry for instance - as well as extensive use inside automobiles and appliances as their finish is not "crystal-clear" without additional additives. Their versatility and clarity increase when combined with other resins, however this adds to their cost.

Pros – very quick cure time, high heat resistance once cured, very limited shrinkage, easily mixed
Cons – high moisture sensitivity (may foam), high levels of off-gassing, not as strong as epoxy

Silicone Resin

Silicone Resins cure to hard films making them ideal for making molds to use with other resins. They cure to a rubber-like texture however, which does not lend itself well to the outer layer of finished goods. Flexible and water repellent, these resins are used for water-resistant applications, rubber and laminates.

Pros – good for mold making for casting, water resistance
Cons – expensive, not suitable for finish layers

Why Epoxy Resin?

Resin Art by Marie Antuanelle

Durable and versatile epoxy resin lends itself as a viable solution for so many applications. It is easily acquired, relatively inexpensive, and available in a number of configurations (or formulations) designed to fulfill a variety of solutions. Epoxy resin has become the "go-to" material for so many artisans, crafters and do-it-yourselfers.

The project application helps determine both the type of epoxy resin and the method to which it is optimally employed. But whether the polymer is used as a coating and sealant for artwork or layered in the creation of a furnishing like a river table; the crystal-clear hard-shell finish will provide a protective layer of impact, chemical, moisture and wear-and-tear resistance.

Let's take a look at the different types of epoxy resins and their characteristics and uses…

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Art Resin

Art resin is specially formulated for artisans and crafters to create, seal and protect a wide variety of projects including drawings, paintings, photography, woodworking and more with a durable hard-shell coating that resists moisture, corrosion and handling wear-and-tear. Art resin generally works with many substrate materials including wood, canvas, metal and plastics.

Designed for quicker mixing and longer working times, art resin's mixing ratio is a simple 1-to-1 volume of resin to hardener and is designed to be self-leveling for easy application. Art resin mixes well with pigments like powdered and liquid tints and dyes for enhancing works of art; and provides excellent color stability and UV enhancement for further protection of artwork.

Casting Resin

Casting resin's 2:1 mixing ratio by volume (resin to hardener) is formulated for thicker layers (also known as "deep pours") of up to 1.5" without the worry of the material overheating. The slightly thinner viscosity, as compared to other resin types, provide longer working times and slower/cooler cures.

For creating beautiful furniture like river tables and encapsulating treasured mementoes and keepsakes into enduring artful display pieces, casting resin is the perfect medium This resin type works with and protects a wide variety of materials including wood, metal and most plastics, however, delicate objects should be protected in a layer of 1:1 epoxy resin (tabletop or art resin) before encapsulation in casting resin.

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Marine Resin

Boats and other pleasure craft succumb over time to wear-and-tear from regular use. Marine resins make a great tool for boating repairs and maintenance to keep watercraft in tiptop shape. Durable, reliable and versatile marine-grade epoxy are used to restore hulls, decks and other components from the impacts of cracks, nicks, grounding and myriad other types of surface and structural vessel damage.

Marine epoxy resin bonds with many substrates including wood, metal and polyester laminate to coat and protect surfaces providing a water-tight seal. The resin's self-leveling properties also provide a great material for wetting-out fiberglass for an even consistent coating and repair – smoothing out naturally and bonding with the fibers of the hull.

TableTop Resin

Probably the most versatile epoxy resin is tabletop resin. This polymer may be used in virtually any application and has become the go-to material for many projects and tasks. Self-leveling, crystal-clear and UV-stable; tabletop resin is designed for tabletops, bars and wood finishes, but may be used for much more. The 1-to-1 mixing ratio of resin to hardener is easy to use and apply.

Crafters use tabletop epoxy for decorative and functional items such as coasters, place mats, cutting boards, serving trays and picture frames. Do-it-yourselfers use tabletop resin for a host of household repairs and maintenance projects to fix furniture joints, windowsills and door frames and wooden columns that need restoring. This material may also be used to repair plumbing and electrical fixtures and structures - creating a solid, moisture-resistant seal.

Adding epoxy resin to a tool set makes for a handy and multipurpose solution for so many aesthetic and practical projects and tasks. From following one's artistic muse for creative creation; to tackling that "honey do" list – epoxy resin is the answer to a great many questions!