



10 Facts about EPOXY RESINS You Need to Know

Disclaimer: Much of the information below is general in nature, non-specific to any particular brand, and randomly presented. There are always exceptions to everything and no doubt someone could debate nearly every point made below. However, in general, the information below holds true and will make you immediately knowledgeable about epoxies.

1. Epoxy coatings are used because of their outstanding chemical resistance, durability, low porosity and strong bond strength.
2. Epoxies consist of a 'base' and a 'curing' agent. The two components are mixed in a certain ratio. A chemical reaction occurs between the two parts generating heat (exotherm) and hardening the mixture into an inert, hard 'plastic'.
3. After the two epoxy parts are combined there is a working time (pot life) during which the epoxy can be applied or used. Generally the pot life will be anywhere from minutes to one hour or longer. At the end of the potlife the mixture becomes very warm (or even dangerously hot) and quickly begins to harden.
4. In theory, a temperature change of 18 degrees F. will double or half the potlife and cure time of an epoxy. Higher temperatures will lower the viscosity (thin) the epoxy, but also reduce the working time a person has to apply the epoxy. Spreading out the mixed epoxy instead of keeping it concentrated in a bucket or container will extend the potlife.
5. Epoxies will harden in minutes or hours, but complete cure (hardening) will generally take several days. Most epoxies will be suitably hard within a day or so, but may require more time to harden before the coating can be sanded.
6. Generally epoxies become too thick and cure too slowly to be applied at temperatures below 50 or 60 degrees F. Temperatures in the 60s, 70s, or low 80s, are best. After the epoxy has cured, it can handle temperatures well below zero degrees F.
7. Epoxies will begin to soften at about 140 degrees F, but will reharden when the temperature is reduced. For common epoxies this temperature is approximate upper end of working temperature range of epoxies. Special high temperature epoxies do exist, however.
8. The best time to recoat epoxy is within about 48 hours after the initial coat. Because epoxies take days to reach full cure, a second coat applied shortly after the first coat will partially fuse to the first coat rather than forming a simple mechanical bond.
9. The difference between polyester resins (commonly used in surfboards) and epoxy resins: Polyester resins are toxic, less expensive, have very strong fumes, are more porous than epoxy resins, and only sticks really well to itself. Generally epoxies (which are often solvent-free) can be applied to Polystyrene foam products whereas the polyester resins will dissolve these products.
10. Fisheyes are areas on a painted surface where the coating literally pulls away for the substrate leaving a coatingless void or fisheye. Often fisheyes are caused by surface contaminants such as a bit of silicon, wax, or oil. Surface tension plays a big part in fisheyeing. There are some additives that can be mixed into the epoxy that will reduce surface tension. Applying several coats of thinned epoxy, instead of one coat of unthinned epoxy, seems to work well. Applying a thick coat of epoxy over a contaminated fisheye surface will bury the fisheye but expect the coating to peel away in the future. As a rule of thumb, always suspect some sort of surface contamination as the primary cause of fisheyeing. Pinholes are similar but caused by expanding air bubbles under the still soft epoxy.