

Casting Resin 8130CR

WORKING CONDITIONS

For best results, all materials and working conditions should be maintained at a constant 60°F-75°F. Epoxy is a temperature sensitive material. When cool, it's thicker and sets slower. When warm, it's thinner and sets faster. Working in a shop or with material above 75°F, may set too quickly and exotherm (become too hot) which could cause it to yellow, distort, shrink or crack.

CAUTION EXOTHERMIC REACTION

Mixed epoxy generates heat. The more you mix, the hotter it will be. Must use after mixing. Only mix what you are ready to pour. May fume and smoke. Please visit the online FAQ before starting your project.

COVERAGE

Volumetric yield is about 25 cubic inches per mixed pound. Coverage and yield can depend on any number of factors, most notably casting thickness, porosity of the surface and waste. A 1.5 gallon kit (1 gallon of resin and a 0.5 gallons of hardener) should yield about 300 cubic inches.

SPECIFICATIONS

All surfaces must be clean, dry and free of contamination. Contaminates include, but are not limited to dust, oil, moisture, sap, lint, and sanding debris. DO NOT use tack cloth, paper towels, dirty rags, contaminated sandpaper, or touch surface with oily fingers. Sand as needed and clean off sanding debris. Wipe surface down with a clean cotton t-shirt rag soaked in an oil free solvent like denatured alcohol prior to applying epoxy seal coat. DO NOT apply epoxy over oil-based stains.

SEAL COAT

Always apply a seal coat before coating or casting against wood. To start, the surface must be clean, dry and free of contamination. Next, apply a thin coat of mixed epoxy to surface. Take care to cover and seal any voids or cracks present. Allow the seal coat to cure to a rock hard solid, and sand with 80-120 grit paper, paying special attention to imperfections such as air bubbles. Lastly, wipe clean with a cotton t-shirt rag and denatured alcohol. The purpose of a seal coat is to minimize the effects of off gassing by creating a thin air-tight barrier between a porous wooden surface and the epoxy so air bubbles won't percolate up through the curing epoxy creating cosmetic defects. We recommend sealing with 1:1 Table Top but you can also seal with Casting Epoxy. Casting Epoxy is an extremely slow curing system by design. If used as a seal coat, you may need to wait 24-48 hrs for seal coat to cure to the point where it can be sanded and cleaned before continuing.

MIX RATIO

The mix ratio is 2 parts resin to 1 part hardener (2A:1B) by volume, or 100 parts resin to 40 parts hardener (100A:40B) by weight. Using the recommended mix ratio is VERY important when using epoxy. DO NOT deviate in an attempt to speed up or slow down the gel time. An excess of resin or hardener will negatively affect the cure and could cause a wide range of short and/or long term problems with your epoxy project.

MIXING TECHNIQUE

Best practice is to combine resin and hardener at recommended mix ratio, mix 1-2 minutes while scraping sides and bottom of container until no streaks or striations, transfer to second container, mix 1-2 minutes again until fully blended, let sit for 1-2 minutes to allow air bubbles a chance to start rising to surface, and then use immediately. Take extra care not to whip in excess air. The whole mixing process shouldn't take more than 5-10 minutes. If the mixed material starts to get warm, that's your last warning the curing reaction is starting to take place and you need to get the epoxy poured onto your surface ASAP.

MAXIMUM MIXING QUANTITY

Do not mix more than one gallon at a time. For larger projects, step pour multiple pours. Only mix up what you intend to immediately use. Exceeding max mixing quantity may cause it to heat up and exotherm upon curing which could cause it to yellow, distort or crack.

MAX CASTING THICKNESS

Max casting thickness can vary depending on a number of factors including shop temp, material temp, mixing quantity, mold material, project dimensions, etc. Larger slabs should be poured thinner than smaller castings to minimize exotherm. Every project is unique, but as a general guideline do not exceed 0.5" casting thickness for a full mixed 1.3 gallon kit, or 1" for a half mixed kit. Step pour multiple layers for thicker castings.

STEP POURING

The maximum casting depth of is roughly 0.5"-1" per pour, but deeper castings can be achieved by step pouring multiple layers. Each layer MUST be allowed to cool to room temperature (70-80°F) before adding additional layers. Once cooled, you can pour the next layer without additional surface prep all the way up until you can no longer indent a fingernail into the previous coat. No sanding necessary. Warmer temperatures will set faster, and cooler temperatures will set slower. Large batches of mixed epoxy will also cure much more quickly than small batches. If allowed to cure past the point of being able to indent a fingernail, then you will want to lightly scuff sand between coats to promote adhesion. As a general rule, if you can sand, you should.

WORKING TIME

Epoxy is a mass and temperature sensitive material. The gel time (time it takes the mixed epoxy resin and hardener to initially harden up) can vary drastically depending on any number of factors such as mixing mass, material temp, ambient temp, mixing time, speed of mixing, speed of application, casting and coating thickness, etc. Casting Resin has a 5.5 hour gel time at 77°F in a 150 gram mass, but will set up much faster if warmer or left sitting for an extended time in a larger mass. The more you mix up, and the warmer it is, the faster it will gel. That being said, 10-15 minutes is all it should take to carefully mix and pour. If the mixed epoxy starts to heat up in your mixing bucket, apply immediately.

CURE TIME

Casting Resin in a 0.5"-1" thick casting at 77°F should be tack free in roughly 4-8 hrs, sandable after 12-24 hrs, and fully cured in 5-7 days. Keep in mind that epoxy is mass and temperature sensitive. Thin castings and cooler working conditions will cure slower, and thick castings and hotter working conditions will cure faster.

TIPS & TECHNIQUES FOR CASTING & ENCAPSULATING

Create a mold out of melamine or MDF board available at local hardware stores. Make sure all seams are sealed prior to pouring. Tape inside corners and seams of mold with Tyvek Tape available at local hardware stores. Coat the inside of the mold with automotive paste wax, release agent spray or Tyvek tape so epoxy does not bond to mold. Mold must be clean, dry and dust free before pouring desired amount of epoxy. For best results, pour epoxy in controlled workspace at temperatures from 65°-80°F. Once epoxy is poured into mold, allow 24 hours for epoxy to gel and set in mold. Areas with low volume of epoxy will take up to 36 hours to fully cure. Increasing heat 24 hours after pouring can speed up cure time. If applying more than one coat, let epoxy fully cure, lightly sand and clean surface and repeat the process if necessary.

TROUBLESHOOTING

Mistakes can happen. If you haven't used epoxy before do a test batch to get familiar before starting your project. The following are the some of the most common problems, causes and solutions you may encounter when working with Casting Epoxy. Please consult our online FAQ section before beginning your project or contact us if you have any additional questions or concerns.

BUBBLES

1. Temperature: Working in a shop or with material below 60°F will cause the mixed epoxy to become too thick to properly release air and self-level.
2. Seal coat: ALWAYS apply a seal coat to wooden surface before flood coating. Wood will off gas and percolate bubbles up through coating if you fail to do so.
3. Mixing: Mixing too vigorously will whip in excessive air bubbles into the blending Resin and Hardener.

NOT SETTING UP

1. Mix ratio: Double check the proper 2:1 by volume mix ratio was used.
2. Resin and Hardener: Make sure you used resin and hardener, and not all resin or all hardener.
3. Fully mixed: Upon mixing, be sure to scrape sides and bottom of mixing container to ensure all resin and hardener are fully blended. Failing to do so can result in soft spots in coating, BUT also note below...
4. Pouring: NEVER scrape or brush the sides or bottom of the container you just mixed in to remove every last drop. No matter how thoroughly you may have mixed, there will always be an unmixed portion which can be dislodged and will leave a wet or sticky spot on your coating.
5. Temperature: If the temp falls below 60°F while Casting Epoxy is initially setting up, it may stall out the chemical reaction needed to harden the epoxy. Increasing shop temp to 80°F+ for 24 hours may help to restart the chemical reaction and harden the epoxy coating.

CRYSTALLIZATION

Crystallization can make epoxy resins appear cloudy, chunky, grainy, or even solid. This is an inconvenience rather than a problem. Once decrystallized, the epoxy resin will be good as new. To decrystallize, heat the resin throughout the container to about 125-140°F until it turns back into a clear liquid. A hot water bath works well to heat the resin. Simply fill a large basin full of very hot tap water and set the tightly sealed container of resin in it until all the crystals melt and the resin clears. Refresh the hot water bath as needed. Shake the container or stir the resin periodically during this heating process to ensure that all potential crystals have melted and can no longer act as "seed crystals." Make sure caps, containers and tools are free of crystallized resin before continuing use with the epoxy. Do not use resin that has any signs of crystallization until it has been decrystallized and is once again a clear homogenous liquid. If heating the epoxy resin is beyond your capabilities or if you have any further questions about crystallization, please contact us. We've got your back.

Unfortunately, crystallization is something that all epoxy resins are prone to. It is difficult to predict and can happen without warning, but happens most rapidly between 32°F and 55°F. Temperature cycles, such as the fluctuations that occur between night and day, also promote crystallization. The crystalline melting point of bisphenol A epoxy resins is 107°F, so any time you are below that temp you run the risk of crystallization. Theoretically, storage temperatures above 104°F could be used to prevent crystallization all together, but that's not very practical. Instead, try to store between 60-90°F in a dry place, at a consistent temperature. Do not allow epoxy resins or hardeners to freeze during winter storage. After use, tightly reseal all containers and store products on a raised surface off the floor during cold weather and avoid storing near outside walls or doors. The good news is that crystallization is reversible and has no ill effect on the handling or mechanical properties of the epoxy resin once decrystallized and returned to a liquid state.