



**BOB SMITH
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INCORPORATED

Hobby FAQ

Q: My epoxy doesn't seem to be completely cured. It still feels tacky on the surface. Is it defective?

A: Several factors can affect the curing of epoxies. Not mixing equal parts is usually the first suspected cause of problems, but since the 50-50 ratio has a plus or minus tolerance of about 10%, this is rarely a problem. Sometimes modelers will intentionally mix in extra hardener. This is not recommended! The improper ratio can result in brittleness and/or loss of strength in the cured epoxy. Incomplete mixing of the two parts will also cause problems. Spend at least one minute to thoroughly mix the two components.

The vast majority of problems with epoxies are temperature related. Most epoxies need an environment that exceeds 70 degrees F. while they are curing. Heating the epoxy hours after mixing will not solve the problem of improper curing. The temperature must be correct during the initial curing time. Maintaining proper temperature control in your workshop will solve most epoxy problems; however, since the majority of workshops are garages where work is mostly done at night when temperatures are low, temperature control can be impractical. In this case there are two options. First, the two epoxy components can be pre-heated before mixing. We have found heating epoxy bottles without their tops in a microwave oven to be the quickest method. The bottles should be heated to where they are only slightly warm to the touch, which usually only takes 10 to 20 seconds, with the resin (black top) taking less time. Do not mix components that have been overheated, as the cure time will be greatly reduced.

The second option is to heat the epoxy after it has been mixed with a heat gun. This should be done both before and after applying the mixed epoxy. If your workshop is particularly cold, run the heat gun over the epoxy again about 15-30 minutes after applying. If you are bonding metal, pre-heat it for best results. Of course, during summer none of these precautions usually need to be taken.

Q: My 30 Minute epoxy started to cure in only 10-20 minutes. Did I get mis-marked bottles?

A: The minute designations on our epoxies are the amount of time one has before the components start to cure to a taffy-like consistency when mixed on a flat surface (such as the flexible plastic top to a coffee can). Higher temperatures will reduce the working time. As epoxies cure, heat is created. If a larger amount of epoxy (1 oz. or more) is mixed in a cup, a mini-reactor is created which concentrates the heat of curing which causes the epoxy components to kick-off faster which creates more heat which further speeds the curing, creating more heat, so on and so on. On warm days, you can end up with a smoking blob. Lay down parallel, equal lengths of each component before mixing them together to get consistent results. The 20 minute designation of our FINISH-CURE™ takes into account its being mixed in larger quantities in a cup.

Q: My cyanoacrylate has been working great but today I can't get it to stick two pieces of wood together. Did the CA suddenly go bad?

A: Not usually. CAs cure (polymerize) when pressed into a thin film in the presence of an alkali environment. In general, ambient humidity in the air and on the bonding surface provide the proper pH to initiate cure in a few seconds. The best bonds are achieved when relative humidity is 40 to 60 percent at room temperature. If the surfaces to be bonded are excessively dry or are acidic, the curing can be much slower or not occur at all. In such cases, INSTA-SET™ accelerator should be sprayed on one surface and CA on the other. INSTA-SET™ is formulated with a high pH that initiates curing in less than 8 seconds.

The CA can lose its potency if exposed to higher temperatures for an extended period. A bottle of CA in a tool box that is left to sit in the summer sun or a bottle that is exposed to direct sunlight will greatly increase the aging process. The CA tends to thicken and turn darker as it ages. Kept in cooler surroundings, Bob

Smith Industries will maintain its potency for two years or more. A good test for thin CA is to shake the bottle and notice how long it takes for all the bubbles to disappear. If it takes longer than 3 seconds, the CA is on its way downhill. It will still form strong bonds, but they will be slower and with less penetration.

Using the wrong consistency of adhesive on a joint will also lead to problems. Thin CA should not be used on end grain balsa wood. The CA can be "sucked" up the fibers of the wood for an inch or more, i.e. the CA is drawn away from the bonding surface. Thicker CA should be applied sparingly to only one surface. The best bonds are achieved if only enough adhesive is applied to fill a gap.

Q: Can anything be used to thin CA (decrease its viscosity)?

A: The only substance that can be added to thicker CA to reduce its viscosity is thin cyanoacrylate. Any other additive will quickly harden the adhesive.

Q: What can I use to bond clear plastics without getting the frosting effect that occurs with regular CAs?

A: When CAs cure they volatize, creating the appearance of a white haze around the bondline. This phenomenon occurs when the cyanoacrylate monomer reacts with moisture in the air, and settles on the part. On areas where this may be a problem, SUPER-GOLD+™ is ideal, especially for clear plastics. You will want to use the minimum amount of CA, so a regulate or extra-fine extender tip should be used to apply to the SUPER-GOLD+™. It works best to apply the CA to the area on the clear plastic to be bonded. This way if you make an error in the placement of the two parts adhesive does not get on areas you want to remain clear. SUPER-GOLD+™ sometimes has a tendency to "string" as the glue tip is pulled away from a surface. The "string" that may be created can be drawn to the clear plastic by static electricity, which can ruin your whole day. It is best to wash the clear plastic with plain water and wipe it dry before bonding. INSTA-SET™ accelerator can be used to immediately cure the SUPER-GOLD+™ since it will not affect clear plastic. (INSTA-SET™ actually works as a great surface clearer. Use it to remove the residue adhesive from adhesive backed labels.)

Q: Is cyanoacrylate toxic, and does odorless CA just cover up what will still be toxic effects?

A: Cyanoacrylate is not toxic! The fumes from CA are a vaporized form of the cyanoacrylate monomer that irritate sensitive membranes in the eyes, nose and throat. They immediately are polymerized by the moisture in the membranes and become inert. They do not penetrate into human internal systems. In fact, CA that is used to suture wounds avert some of the infections that occur in stitched wounds. It also eliminates the need for stitch removal because it sloughs off along with the outer layer of skin after a couple of weeks. Cyanoacrylates have been successful in grafting skin, bone and cartilage; repairing eyes; closing dangerously ballooned blood vessels in the abdomen; and stopping spinal fluid leaks.

About 5% of the population can become sensitized to CA fumes after repeated exposure. Just a small exposure can result in flu-like symptoms. Our odorless SUPER-GOLD+™ CAs eliminate any adverse reactions. The most common misnomer about CA is that they contain cyanide and that the fumes will poison you. Not True! Period. Case closed.

Q: Can SUPER-GOLD™ odorless CA be used on white foam?

A: SUPER-GOLD™ and SUPER-GOLD+™ are completely white foam compatible. INSTA-SET™ accelerator is also white foam compatible, but it must be used correctly. While INSTA-SET™ will not attack the foam, the heat generated during the curing of the SUPER-GOLD™ may melt the foam! The minimum amount of INSTA-SET™ should be used. Since there is usually little or not moisture present in white foam, when bonding two pieces of foam one piece should be lightly misted with INSTA-SET™ and left for 2-3 minutes before applying SUPER-GOLD+™ to the opposite part and bringing them together.

Q: Why is SUPER-GOLD™ so expensive, and why does it have a shorter shelf life?

A: It's the nature of the beast. The raw materials for odorless CAs are universally extremely expensive and limited in supply. Their shorter shelf life is an unavoidable result of their chemical makeup and adds to its marketing costs. The SUPER-GOLD™s have a maximum shelf life of 1 ½ years under ideal conditions.

Q: My colored cap sometimes can be difficult to take off. What can I do?

A: The different rates of shrinkage in the various colors of plastic we use for our caps and tolerance variations in molds can sometimes result in caps that fit too tight. A twisting motion as you pull up on the cap is usually all that is needed to remove it. If you find the cap too difficult to grip, take a spare ¼ - 20 or ¼ - 28 metal nut and self-thread it onto the top of the cap, which will give you a better grip. When using INSTA-CURE™ super thin CA, we recommend using teflon tubing or an extra-fine extender tip. They can remain part of the top and the blue cap can be set aside without having a significant affect on the shelf-life. The finer tips allow more precise control of the thin CA and greatly resist clogging.

Q: After applying FINISH-CURE™ and sanding it down to a smooth surface, I accidentally went down to the bare balsa. Do I have to apply more epoxy to seal this area?

A: The objective of most modelers who use FINISH-CURE™ is to achieve a durable and smooth surface while adding the minimum amount of weight. If you haven't sanded down through the epoxy in a couple of spots, you haven't sanded the surface enough and are adding extra weight! Since it is usually very inconvenient and time consuming to mix a small batch of epoxy for such small areas, INSTA-CURE™ super thin CA is the best alternative. Apply a few drops to the balsa and use the fine tubing on the tip as a brush to spread it around. Wipe off the CA with a paper towel and then apply more CA, followed again by a quick swipe of the paper towel. A light spray of INSTA-SET™ accelerator to insure a full cure allows the area to be sanded within 10 seconds. A hard-backed sanding block will blend the area into the epoxy finish. Older CA that has lost some of its potency can actually be easier to use for this application. Entire surfaces can be finished smooth using just thin CA. The fumes that result from the application of such large quantities of CA can be overwhelming so extra precaution must be taken to provide sufficient ventilation. Thin CA can also be used to apply light weight fiberglass cloth. Substituting SUPER-GOLD™ odorless thin eliminates the problem with fumes.