

CHARLEY ROBERTSON'S
SCORE HIGH GUNSMITHING

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What is Pro-Bed 2000?

Pro-Bed 2000 is a Matrix Stabilized Microsphere Composite derived from a 2 part epoxy. Approximately 85% by volume of the mixed epoxy is made up of high quality additives that tremendously improve the qualities of epoxy. These additives, (microspheres, carbon fibers and Fiberglass) eliminate shrinkage and adds to the compressive and flexural strength as well as improve the adhesive capabilities. Like most all epoxies, the cure rate of Pro-Bed 2000 is affected by temperature. If the temperature is above 95 degrees Fahrenheit Pro-Bed 2000 can start to cure and become non-workable as quickly as 45 minutes to an hour. If the temperature is around or below 75 degrees Fahrenheit, it can take as long as 3 to 5 hours to start to cure. If you are inexperienced at epoxy bedding you might want to keep this in mind. The cooler temperature can give you more time to get the job done while not affecting the quality of your work. Above 75 degrees Fahrenheit Pro-Bed 2000 will cure in about 16 hours. It will however continue to cure for another 48 hours becoming harder and tougher. **For best results cure Pro-Bed 2000 Over 70 deg Fahrenheit.**

Each kit contains:

- 1 jar of resin.
- 1 jar of curing agent.
- 1 small plastic bag of thickening additive (Fumed Silica)
- 1 small jar of green colored mold release wax.
- 1 brush for applying the mold release wax.
- Modeling clay for plugging holes.
- Mixing sticks.

After a long period of time the contents of each jar will separate. Before mixing it is imperative that you stir the contents of each jar completely until homogeneous. **It is very important to remember not to use the same mixing stick in both the resin and curing agent.**

The mix ratio of Pro-Bed 2000 is 1:1 by volume. Because of a relatively non critical mix ratio, the visual volume method is perfectly acceptable and is what I use. If you have good scales and would rather mix by weight the ratio is 77 PHR (77 parts hardener to 100 parts resin by weight). An easy way to calculate this would be to measure out any amount of resin and multiply that weight by 0.77. Example: 93 units (grains, grams, ounces pounds or any other unit of weight) of

resin times .077 equals 71.61 unites of curing agent. It is very important that the 2 parts be adequately mixed together in order to reach full cure. Don't scrimp on the mixing.

Because each bedding job has different needs, each kit comes with a small amount of fumed silica to be used as necessary to thicken the mixed epoxy. Fumed silica is a very fluffy silicon crystal with tremendous capillary capabilities. It will **NOT** negatively affect the cured epoxy and can be added until the epoxy achieves a very thick paste like consistency. Add the fumed silica to the epoxy last after mixing together both the resin and curing agent. It can be added to all or part. I will often scoop a small amount off to the side and add enough fumed silica to make a paste to be used only in problem areas where the mixed epoxy might be prone to run.

The mold release packaged with Pro-Bed 2000 is a buffable wax type. Use the brush provided to apply the wax onto your barreled action and any other parts that may come into contact with the bedding epoxy. Make sure that the wax gets into all the corners. After a few minutes buff the surface with a soft cloth to bring it to a shine, similar to waxing a car. Repeat this process 2 to 3 times. After you have removed the barreled action and all other parts from the cured epoxy the wax cleans off easily with most types of petroleum solvents. Paint thinner works particularly well.

Modeling clay is also provided to fill any voids such as pin holes that might fill with epoxy and making it difficult to disassemble without damaging the stock.

Why Epoxy Bed your Rifle?

Let's discuss just exactly what it is we are trying to accomplish with our epoxy bedding. During the course of firing, vibrations travel the length of the barrel and action. They are produced by everything from the falling of the firing pin to the detonation of the primer to the bullet going down the barrel. Our goal is to eliminate these vibrations and make vibrations that we cannot eliminate as consistent and repeatable as possible. As recoil is produced, certain components shift, flex and compress. To insure that all this happens exactly the same way each time, we need to take a look at how the action sets in the stock. Built-in stress is detrimental to good accuracy. When we tighten the guard screws, we must insure that we don't exert any stress on either the stock, action or barrel. This stress is detectable by guard screws that tighten gradually. This gradual tightening is what it feels like when parts bend and flex into a position. If nothing can bend or compress, the screws will stop solid. We can create a stress free fit by having all our major components at rest while in an assembled state. That means that the guard screws are not tightened enough to induce any flexing on any of the components. From there, fill all of the space between the components with a liquid epoxy. Epoxy in its liquid state imposes no force on any component, but when it hardens all components are as one. Our goal is to attach everything together without exerting any stress.

How to Epoxy Bed

First start by free floating the barrel. You should be able to slide two to three sheets of notebook paper between the barrel and forend. If you are installing aluminum pillars, this is the time to drill out the stock to accommodate them. Pillars can also be derived from the epoxy itself by drilling out the guard screw holes to 1/2 inch or so and filling them with epoxy while bedding. Next we need to remove stock material to accommodate the bedding compound. This can be done a number of different ways. I like to remove stock material from around the lug area so that the recoil lug will bear on a large section of cured epoxy. Also remove material from under the front receiver ring. When removing material from here be sure to leave a small amount of the original inletting on each side of the channel. This helps keep the barreled action aligned during bedding. The same applies to the rear tang. This technique applies mostly to wood stocks. With most synthetic stocks it is best not to remove any material. After relieving the stock, reassemble the barreled action and stock. It should fit just as it did before. If your stock has a wide gap between the barrel and forend and you want to fill it with epoxy and maintain a floated barrel, you can apply two thicknesses of two inch wide heavy duty electrical tape lengthwise to your barrel. Check again with notebook paper to see that your barrel is still free floated with the tape installed. Make any necessary alterations. Pro-Bed 2000 will adhere to most all stock finishes. Unfortunately most stock finishes don't have a good bond with the stock. Therefore it is best to scrape off all of the stock finish from the bedded portion of the inletting. Use modeling clay or something similar to fill the trigger assembly pin holes and any other cavities that could fill with epoxy. Epoxy filled crevasses can make it impossible to remove the metal from the cured epoxy without damage to the stock.

Remove the trigger assembly and any other parts that will pose a problem and apply mold release to all the metal parts, barrel, action, trigger guard, guard screws and magazine box. The clean up job will be much easier with mold release applied to certain parts of the stock's inletting, such as the sides of the magazine well and to the sides of the trigger inletting. Be very careful not to get any mold release on any part of the stock area that needs to be bedded. After mixing the epoxy, apply a thin coat to all of the surfaces to be bedded. This will act like a flux and insure proper wetting out of the stock and help control the flow of the epoxy. Next add liberal amounts of epoxy to all portions of the inletting. Be sure to use adequate amounts in the areas where large portions of wood were removed. In the barrel channel fill only the bottom. As the barreled action is lowered into the channel it will force epoxy up from the bottom and will not trap air bubbles that cure into the epoxy. When assembling the components with the epoxy in place be sure that you do not over tighten the guard screws. They should be just snug enough to hold everything in position and no more. Next remove any and all of the epoxy that has oozed up from the inletting and be sure to wipe off any epoxy from the outside of the stock. Finger prints or smudges cannot be removed without damage to the stock finish after the epoxy has cured.

After sixteen or more hours, check the leftover compound. It should be hard. Before removing the barreled action from the stock, check all the edges of the stock where it meets the metal. Any compound that has run over the edge needs to be removed, because it will break off and parts of the stock will break off with it. With the stock firmly in a vise, partially insert the bolt in the rifle and use it as a handle to raise the barreled action out of the stock. Use a rocking motion, pulling up on the barrel then the bolt until it breaks loose. After the barreled action is removed from the stock use a fine file to clean up the edges. On the inside of the stock around the trigger and magazine box any excess resin should pop right off if you previously applied mold release to this area. Clean all of the metal and completely reassemble. Check the trigger and safety to make sure they move freely and function properly. Check for stress by loosening and tightening the trigger guard screws. The barreled action should not move at all. The screws should tighten solidly. You are now ready to go to the range and enjoy the benefits of your efforts.

Safety First

Pro-Bed 2000, like all epoxies, contains Volatile Organic Compounds (VOC). You should always avoid skin contact with Pro-Bed 2000 by wearing protective clothing such as Latex or Nitrile gloves. Should Pro-Bed 2000 come into contact with your skin wash thoroughly with soap and water. NEVER EVER clean your skin with solvents such as acetone or lacquer thinner. This only thins out what your trying to wash off so that it can more easily be absorbed into the skin.

Resin Contains: Bisphenol A Epichlorohylien Aduct

Curing agent Contains: Dimerized fatty acid and polyamine aduct.

Mold Release Contains: Petroleum Distillates.