

An Alternative to Using Plaster Bandages As the Supporting Mold For Alginate Life Casting

By David E. Parvin, A.L.I.



Photographs by Andy Hall

The author painting thin plaster into cotton which is stuck into the alginate of this torso casting.

I do not encourage anyone to be self taught. I can speak with some authority because I have been almost entirely self taught. I could have saved so much time by not reinventing the wheel over and over. This was especially true when my wheel was inferior to someone else's on my studio wall is, "There is almost always a better way." And I am always looking for a better way. (There are other helpful hints on my wall such as, "We are not like Robin Hood. Robin Hood

robbed from the rich, we rob from everybody!" But I will save them for future articles.) However, sometimes one gets lucky and comes up with something that is better. What follows is one of these.

As far as I know, every other life caster that I have ever met uses plaster bandages as supporting or "mother" mold for alginate or silicone impressions. While it is true that plaster bandages are relatively simple to use and almost everybody has been taught

to use them, there are some disadvantages including greater expense, slower application, and induced flaws in the end product'

1. One has to purchase the bandages and while not especially expensive are more costly than what I am proposing.

2. The application of plaster bandages is a very slow process. Ideally, one person wets the bandages and another applies them to the model. As slow as that is, applying the bandages solo is much worse. There is a faster way.

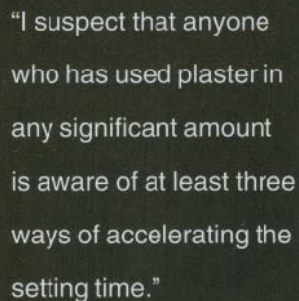
3. Generally one embeds some sort of fuzzy material, such as cotton, into the alginate to bond the alginate to the mother mold. The plaster in the bandages must soak through the fuzz. The bandages are not all that "juicy" and some clumps of fuzz may not get throughly soaked leaving air spaces that can result in bumps or "outties" in the positive casting, incomplete soaking of the fuzz may also weaken the adhesion of the two layers. (For an improved way to apply the fuzz, see "How to Extend the Setting Time of Alginate and Testing a New Product" Sculpture Journal, May 2003.

4. The fourth and last disadvantage is by far the most important. Applying plaster bandages can easily cause dimples in the casting. Here is what happens. The bandages must be spread on with at least a little pressure to conform to the alginate without air pockets or bubbles. The first layer is not the problem. If one depresses the alginate and the flesh beneath it, the flesh, alginate, and wet bandage will likely return to the proper contour. But if the bandage has partially setup, and deformation likely will remain. This is a common occurrence when a second layer of bandages is applied for additional strength. I have been told by some life casters that a certain amount of dimples is expected. Also, I suspect that some new life casters may not even notice the dimples because a not quite perfect life casting can still be quite impressive. But one's idea of perfect or even acceptable

changes as one's skills improve. There is a way to get more perfect results. Simply stated, any solution for more flawless castings while saving time and money is to make your own bandage substitute using cheesecloth and a very fast setting plaster and applying them with no pressure. Only a few things are needed.

1. Cheesecloth. May be purchased from any cloth store. Comes in boxes of 100 yards though it may be purchased in lesser amounts. It comes folded twice to make four layers.

2. Fast setting plaster. I use impression Dental Plaster with is made by U.S. Gypsum and has a setup time of 3.5 to 5 minutes. If this is not available, Laboratory Dental Plaster with a setup time of 6 to 9 minutes will work almost as well. If neither of these is available, there are several ways to significantly speed up plaster. More on this later.



"I suspect that anyone who has used plaster in any significant amount is aware of at least three ways of accelerating the setting time."

3. A bucket for mixing. I use flexible 1 or 2-1/2 gallon buckets depending upon the size of the casting.

4. A 3" brush for faces and/or a 4" one for bodies. I use the cheapest throw-a-way ones I can find.

My life casting process is pretty much the same as anyone else's until the construction of the mother mold. In other words, a layer of alginate is applied over the area to be cast and some fuzz is embedded into the alginate. (If anyone is still embedding the fuzz prior to the alginate setting up, please review the above mentioned article, "How to Extend the Setting Time..." for a much simpler way.) Rather than wetting plaster bandages and

applying them over the alginate, begin by using a paint brush and quickly wet the entire surface with fast setting plaster that has been mixed to about the consistency of cream. All you want to do is soak the fuzz down to the alginate, you are not trying to cover the alginate with a layer of plaster. Since "about the consistency of cream" is a little vague, I'll make it easy for you.

The recommended mixing ratio for any of the dental plasters is 70 parts water to 100 parts plaster by weight. I suggest using 70 parts water to 70 parts plaster for a 1 to 1 ratio. Different plasters have slightly different recommended ratios but 1 to 1 should work with any plaster. The normal will make the plaster too thick. The normal would make the plaster too thick to soak through the fuzz and the layer of cheesecloth (see below); and if using IDP, it would set-up far too quickly. Soaking all the fuzz with a brush is very quick taking a minute max even for a torso from the top of the neck to mid thighs.

While the next step is easier and faster for two people to do, it can be done solo. I have my assistant place a piece of cheese cloth over the alginate-fuzz plaster and I paint it with additional plaster making sure that it is soaked through. The essential thing here is that only the tip of the brush is touching the mold and there should be no distortion or dimpling. The plaster impregnated cheesecloth pieces will adhere to the alginate very well even on vertical or overhanging surfaces. Some helpful pointers: the cheesecloth comes folded so that it is four layers thick. Do not unfold it. Use pieces about 18 inches long though I generally cut a few pieces about 12 and 6 inches long for covering smaller areas. I always go from the top down and the outside edges in. There is no need to overlap the pieces of cheesecloth more than an inch. Do one piece of cheesecloth at a time; paint the plaster on a piece of cheesecloth before putting another piece on the casting. The temptation will be to put on all the cheesecloth and then start applying the plaster. Even the thin cream



Painting plaster onto a piece of cheesecloth as a substitute for plaster bandages

like plaster will begin to thicken in just a few minutes. Once the plaster becomes too thick to soak through the cheesecloth, adding some water may buy you some time, but not but not much. When casting a torso or larger, I usually have to mix a second batch. If you mix the second batch in the same bucket in which there remains a small amount of the first plaster, the second will setup even more quickly so that mixing additional plaster only adds a few minutes to the process.

One layer of cheesecloth is usually sufficient.

However, if I am concerned that some protruding part of the mold, e.g. the breasts, might collapse when the mold is placed "face down" on a foam pad, I will cover just that area with a second layer. One can also stir into the plaster some fibers such as chopped fiberglass and paint it over the cheesecloth layer. If I want to stiffen the entire mold without adding the weight of another layer, I often take a piece of cheesecloth about three feet long and dip it into the plaster. I then twist it into a roll and place it along the outer edge of the mold. I repeat this until I have encircled the entire mold. Applying the cheesecloth and plaster should only take 4 to 5 minutes. The outer mold is sufficiently strong when it is warm to the touch. Removing the mold off the model, casting a positive, and demolding should be the same as if made from plaster bandages.

Some people may get the bright idea of dipping the pieces of cheesecloth in the bucket of plaster and spreading them on with their fingers exactly as if they were bandages. But I can assure you that they will stay in

place better and will produce far less dimpling if applied as I have described.

If you do not live in a large metropolitan area, congratulate yourself for not living in a large metropolitan area, but you may have trouble finding a fast setting plaster such as impression Dental Plaster or Laboratory Dental Plaster. While you may order them from a dental supplier, they will cost four or five times as much as they would have if purchase from a U.S. Gypsum dealer. To find the closest dealer who carries these, go to www.gypsumsolutions.com

Let's suppose that neither IDP or LDP are available to you, what are your options? First of all, understand that all you need is a plaster that sets-up very quickly but does not get so strong that the outer mold is difficult to remove. Forget "Plaster of Paris" which can be purchased at your local hardware but is of such low quality that it's all but useless. (I once did a demonstration using Plaster of Paris and had to wait over an hour for the mother mold to set-up enough to remove it. I was running dangerously low on jokes and tap dance tunes!) Also don't consider Hydrocal or Hydro-Stone; both are too strong. US Gypsum Company manufactures at least 29 different plaster and gypsum cements for artistic and industrial applications. For specifications on any U.S. Gypsum product, go the web site mentioned above. My first alternative choice would be Regular Dental Plaster which sets up in 19 to 22 minutes. My next choices would be equally Pottery Plaster, # 1 Pottery Plaster, or Molding Plaster which set-up in 27 to 37 minutes. The above plasters are relatively soft allowing for easy removal of the mother old. All that is needed is a way of speeding up the slower ones.

I suspect that anyone who has used plaster in any significant amount is aware of at least three ways of accelerating the setting time; mixing with warmer water, adding table salt, and adding powered old plaster. So that I not lead anyone astray, I experimented with these, plus two other methods and spoke with a US Gypsum Company's technical assistance expert at 1-800-487-4431. I used Regular Dental Plaster with 70 degrees F (21 degrees C) water. I also mixed the samples to a much thinner consistency than normal, i.e. like cream as mentioned earlier by using a 1 to 1 ratio of plaster to water. The control sample was slightly thicker in 10 minutes, was too thick to use in 18 minutes, and was strong enough to demold in 24 minutes.

After establishing the baseline with the control sample, I mixed a batch using 100 degrees F water. Much to my surprise, the warmer water batch took longer to set-up. Since this was contra intuitive, I repeated the experiment and got the same result. Mr. Technical Expert explained that warmer water will reduce the setting time but only if the water and the plaster are within 10 degrees F. Otherwise, the temperature difference "shocks" the plaster and increases the setting time. Warm water is readily available, but heating pots of plaster might be a little inconvenient. There must be a more practical way

The second thing I tried was adding table salt. I used 3% of the weight of the plaster (or water, since they weighed the same). The salt did reduce the setting time but Mr. Technical Expert said the salt weakens the plaster and should not be used as an accelerant.

I even tried adding a solution of aluminum sulfate and water which accelerates Forton MG wonderfully. It doesn't work with plaster at all.

My next step was to mix a small amount of plaster in water (too little to setup) and let it cure for about 15 minutes. I then added more plaster to make the 1 to 1 ratio. This batch was slightly thicker in 3 minutes, too thick to apply in six minutes and strong enough to demold in 10 minutes. This is certainly doable. All one would have to do is make a water/plaster mix before starting a life casting and then use the mixture instead of plain water to mix the plaster.

The fastest method that I tried was to add crushed plaster to the mix. I took a piece of dried plaster that was as several weeks old and pulverized it with a hammer. Then I sifted it through a kitchen colander producing a fine powder. I added this reconstituted plaster to the next sample at a ratio of 5% old to new. I mixed the plasters into an equal amount of water by weight. The mixture was noticeably thickening up in 2 minutes, was too thick to apply at three minutes, and ready to demold at 8 minutes. This compared to 10, 18 and 24 minutes with the control sample.

Mr. Technical expert told me that what I had done by pulverizing old plaster is produce *terra alba*, which is Latin for "white earth." He recommended this method for accelerating plaster. (Having spent four years of my youth studying for the priesthood, I have great respect for things with Latin names.) It seems my

5% was overkill, 1% is supposed to produce maximum acceleration. I was given one caveat (another Latin Word!) When using *terra alba*, it must be fresh. Apparently the crystals' surface smooths over with exposure to the moisture in the air and the *terra alba* becomes less potent. Keeping it in an airtight container helps. Also smashing it again breaks open the crystals and restores its effectiveness. While *terra alba* is not difficult to make, U.S. Gypsum sells it by the bag full.

One additional trick I was told is that the longer and more thoroughly you mix plaster, the faster it will set-up. I did not do any experiments with varied mixing time, but I have no reason to doubt the Mr. Expert.

If this seems unnecessarily complicated and difficult, it really isn't. I would encourage you to get some Impression or Laboratory Dental plaster and some cheesecloth and give it a try. I have shown this method to at least several hundred people in my workshops, most of whom have had some experience in life casting. I have yet to have anyone say that he/she would rather go back to plaster bandages. The only negative feedback has been problems in getting fast setting plasters in their hometowns. If after going to the web site, you cannot find a practical source, you may have to resort to accelerating slower plaster. While it will take little experimenting. I am confident that it will be well worth your time.

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