

# How To Extend The Setting Time Of Alginate

by Dave Parvin, ALI

*The setting time of alginate must follow the Goldilocks Syndrome. Too quick and one cannot get the job done. Too slow and the subject becomes the victim. It has to be just right. On one hand, there are dental alginates that set up in as little as a minute. Great for infants' hands but far too fast for faces, bodies, or more complex hand casting. Most of the alginates that are formulated for artists that I have used have a setting time of about five minutes, enough time for a simple casting. But as my lifecasting has become more and more complex, I have found that a few more minutes working time is essential.*

Here is the problem. Imagine that you are attempting to cast a face. If a face to you is just from the top of the head down to part of the neck and back to part or all of the ears, then five minutes is plenty of time to mix the alginate, apply it and embed some sort of fuzzy material such as cotton or mock wool before it sets up. But a "face" to me means from the top of the head down to at least mid chest and back well behind the ears and including the shoulders and often one or both arms and hands; five minutes just isn't enough time.

The alginate that I prefer is MoldGel SloSet, which is formulated for about eight minutes setting time (more about this alginate later). While eight minutes is usually enough time, there is another reason for any serious life caster to be prepared to slow down the setting time of alginate.

I have been made privy to alginate's dirty little secret. Apparently, it is extremely difficult to precisely control setting time. My source that has 40 years of experience in formulating and manufacturing alginates tells me that all manufacturers struggle with this. This partially results from problems in blending the ingredient. Also, the relative humidity present in the air while the alginate is being manufactured affects the setting time; the more humidity, the faster the setting. Thinking that you have five or eight minutes to work and finding that you have



*"Eyes Wide Open," by sculptor Dave Parvin, ALI.. This is a lifecasting sculpture completed in cold cast bronze. The making of the mold required at least 8-minutes of setting time for the alginate. used.*

only three or six minutes can seriously mess with your schedule unless you are prepared.

There are five ways to extend the setting time of any alginates. Varying water temperature, varying the water to alginate



ratio, adding a second alginate layer, adding a retarder and finally the best way using Algislo™.



*"Young Dancer," by Dave Parvin, ALI. A Racu composition.*

The setting time of alginate is inversely proportional to the temperature of the water. The colder the water, the longer the setting time. The warmer the water, the faster the setting time. Aside from the possible intended affect of raising goose bumps and puckering nipples, cold alginate can shrink other parts and nobody wants to be called "Tiny". But the biggest disadvantage is that cold alginate is just not comfortable for the subject.

The setting time is also a factor of the alginate/water ratio; more water means a thinner more runny mixture and a longer setting time. This sounds like the answer, however, this is the least desirable approach. Alginate should be about the consistency of oatmeal but without lumps; thick enough that it will remain in place from 1/8 to 1/4 of an inch thick on a vertical surface. Too thin and it will simply run off. Too much water will also weaken the impression.

There is another solution, which will occur to almost everyone who is beginning to work with alginate that seems so simple and obvious, just use multiple layers. As I

mentioned above, when casting a face or a body, there are two steps that must be accomplished prior to the alginate's setting up. The desired area must be covered and something fuzzy such as cotton, mock wool, etc. must be embedded into the alginate, which will in turn bond the outer mother mold to the alginate layer. If one runs out of time, why not just mix a new batch and continue? Unfortunately, one of alginate's more peculiar characteristics is that new alginate will not bond to old once the old has set up unless one uses a bonding agent.

All that is needed is a mild base solution such as baking soda and water painted over the set up alginate. Prior to discovering MoldGel SloSet and when I was still using 5-minute alginate, I used this method for several years with good results. While this doesn't actually retard the setting time, the result is the same and one has more time to accomplish the two steps. But there are two disadvantages, two thinner layers probably takes more material than one thick layer and adds another step to the process which takes more time resulting in additional discomfort for the subject. This technique can be extremely helpful for very complex castings or if one wants to build up a thick application of alginate.

Also, if after you have applied your alginate, you discover that you have a problem such as an area where the alginate is not thick enough or the fuzz wasn't embedded, the situation can easily be repaired using this method. I always have a solution of baking soda and water handy just in case I need it. By the way, adding a little dark dye to the solution of baking soda allows you to see where you have applied it.

The fourth solution is almost the answer. There is retarding agent available that is in white crystal form that looks like table salt but isn't. The first time I ordered some of this it came without any directions. I called the manufacturer and spoke with a technical representative. Even though he was supposed to be the expert, he didn't seem to be real sure of the amount required to allow me the several extra minutes that I needed. As I recall, he suggested that I use about an ounce per pound of alginate. I was attempting to cast the front half of a torso. After 30 minutes, the alginate was just as liquid as when it had been applied. Another phone call and I realized that the expert was clueless (perhaps this explains why this particular manufacturer is no longer in business).



Fortunately, the model was a good sport and after getting her cleaned up, we tried again using a much smaller amount, which worked. If you try this method, be sure to follow the directions exactly since a little goes a long way. But remember that I said that this "solution is almost the answer". The problem is that often soft spots occurred in the impression. I had been directed to add the crystals to the alginate powder. It seemed to me that a more logical method would have been to add the crystals to the water so I tried it but with the same result. Some experimentation convinced me that the crystals do not dissolve quickly enough to allow for a uniform distribution throughout the mixture and where heavy concentrations occur, there will be soft areas of ungelled alginate.

Now we get to the part where "they lived happily ever after". There is a new product that solves the problem; it is a liquid called "Algislo™" made by Artmolds. When I first got some of it, I experimented by mixing 5 ounces of Artmolds Regular Set alginate to 16 ounces of water at 28 degrees C. (82 degrees F). In the next batch, I substituted ½ ounce of water with ½ ounce of Algislo; then 1 ounce for 1 ounce, etc. (Note: I did not just add the Algislo without reducing the water or the extra liquid would have changed the viscosity of the mixture). The results are shown in the following table:

Alginate	Water	Algislo	Setting Time
5 oz.	16 oz.	0	2 min + 50 sec.
5 oz	15 ½ oz	½ oz.	3 min + 50 sec.
5 oz	15 oz	1 oz.	4 min.+ 40 sec.
5 oz	14 ½ oz.	1 ½ oz.	6 min.+ 15 sec.
5 oz	14 oz.	2 oz.	8 min.+ 00 sec.
5 oz.	13 ½ oz.	2 ½ oz	9 min.+ 30 sec.
5 oz.	13 oz.	3 oz.	12 min.+00 sec.

The really exciting thing to me was that I got no soft spots. I suspect that this is because Algislo being a liquid blends uniformly into the water and the water/alginate mixture. While I intend to live happily ever after, I do have a caution. Notice above that the amount of change increases as you progress down the table. I have learned that the manufacturers of the better alginates do not simply increase setting times by adding large amounts of

retarding agent without reformulating the alginate.

Specifically, additional alginic acid must be blended in to maintain the desired characteristics or the alginate may only set up to about the consistency of a soft boiled egg, too fragile for a durable impression. If you are using a high quality alginate such as I experimented with above, you can easily get up to an additional 4 or 5 minutes working time without any problems.

One last point that I would like to make is that all alginates are not alike. I have had people in my lifecasting workshops proudly produce some alginates that they had purchased "over the internet" at a bargain price. Well, I'm always looking for a bargain too so I have suggested mixing a sample and testing it. While there may very well be some bargains out there that I have not found, what I have seen so far is that you get what you pay for.

The usual problem is the soft-boiled egg consistency mentioned above without even adding any retarding agent. I can only assume that the low price is the result of skimping on materials. The two alginates that I currently use almost exclusively are Artmolds MoldGel Regular Set and MoldGel SloSet. The regular set will gel in as little as a three minutes with very warm water. I use it when I need speed such as for infants' hands. The SloSet's eight minutes is ideal for more complex castings. Stick with quality and your castings and your frustrations will be the better for it.



#### ABOUT THE AUTHOR:

*Art Review* has called him "... the premiere life casting expert in Colorado, maybe in all the West." Dave Parvin was honored by being one of the first artists given life membership in the almost four-year old Association of Lifecasters International.

Though principally known for his bronzes, Dave has also worked in wood, Forton MG, concrete, pewter, Racu and most recently urethane. About twelve years ago, Dave became interested in life casting. Mr. Parvin is recognized as one of the innovators in life casting having developed many new techniques.

Presently showing in seven galleries from California to Indiana, Dave has a long list of commissions, juried show participations and media recognition.