
Life Casting a Head in the Round

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

At the end of my article in last month's "Sculpture Journal" I had finished making an impression of a young lady's head in the round using alginate. In this article, I will finish making a free standing cold cast metallic bust attached to a base as in photograph #1.



#1 Finished Head



#2 Turning the mold upside down for assembly



#3 Spraying in the first of two releases which act as barriers between the metallic Forton MG and the alginate.

The first step was to reassemble the two parts of the mold. I fitted the back half of the mother mold in place and then turned the completed mold upside down. (Photograph #2) I joined the two halves together securely by wrapping cheese cloth with Impression Dental Plaster making sure that the back half of the alginate fitted securely up against the mother mold. Because this part of the alginate was two layers thick, it stayed in position with minimum seam. If needed, Cholesterol can be coated on the inside of the mother mold to help the alginate stick to the back. Another trick is to use Super Glue along with a catalyst called "Insta Cure" which is available from hobby stores and which will bond alginate to plaster and even alginate to alginate.

I often emphasize that life casting has to be divided into two separate processes. In this respect, it is rather like photography in which taking the picture is one and working in the dark room or with a computer is the other. With life casting, the first is making the most perfect impression or mold that one can of the model. The second is what one does with that mold and where any number of artistic choices and opportunities lie. The simplest and most common solution would have been to fill the mold with plaster or something similar and, perhaps, apply a faux finish. What I did in this case was make a very believable "bronze" casting using the Forton MG casting system. I would need the following, all of which are available from suppliers listed in this magazine:

1. At least three pints, by volume, of blended metallic Forton MG powders.
2. At least 5 pints of blended plain Forton MG powder. (See below.)
3. At least 4 pints of the Forton MG liquid, VF-812.
4. Several 2 inch, inexpensive chip brushes.
5. A mixer attached to an electric drill.
6. An 8 inch piece of 3/4 inch copper pipe.
7. A 12 inch piece of 3/4 inch all thread.
8. Some rigid casting foam such as Polyfoam R-8 from Polytec.



#4 Drying the releases



#5 Painting in the first layer of metallic Forton MG.



#6 Slushing the second layer of metallic Forton MG around the inside of the mold

9. At least 8 ounces of "accelerant" made by dissolving 1 part aluminum sulfate into 10 parts of water. Aluminum sulfate is available from any place that sells garden supplies.
10. Several one-gallon, plastic buckets.
11. Several hands full of chopped fiberglass.

12. Some rubber gloves.
13. Some blue/green and black patina solutions.
14. 2 mold releases: Pol-Ease 2300 by Polytec and Synlube 531 by Synair.
15. Very fine, "0000," steel wool.
16. A cloth buffing wheel and a buffing compound such as "Tripoli."
17. A can of clear acrylic spray.
18. Some self-sticking felt or felt dots.

I should point out that I am aware of 4 other materials that are "copy cat" Forton MGs and may be substituted. But there are differences. They cost more ranging from just a little more expensive to over twice as much. Also, all of them set up much more quickly and as I will explain below, this makes their use less convenient. (For a more complete explanation of Forton MG, see "Mixing Forton MG Simplified," by yours truly in the July 2003.

When you purchase Forton MG, you get a liquid called VF812 and two powders, dry resin and hardener. A third powder, FGR-95 is purchased separately. Blending the Forton MG powders is a cinch. I use two clean 5-gallon buckets with lids, one for the plain and one for the metallic. I usually mix about half a bucket full. For the plain, I weigh out about 10,000 grams (22 pounds) of the FGR-95 and add 10% or 1000 grams (2 pounds and 3.2 ounces) of dry resin and 0.5% or 50 grams (1.75 ounces) of hardener. I use a 4-inch Jiffy Mixer attached to a heavy duty electric drill for blending. For the metallic, blend as the plain but add twice the weight of metal powders as you did FGR-95. When ready to mix the VF-812 liquid and the blended powders, all you do is use twice as much of the powders, either plain or metallic by volume as you use the VF-812 liquid and mix.

Now, about metal powders, there are different kinds available such as copper, bronze, brass, aluminum, and others. I have found that copper powder in Forton MG results in a more realistic bronze look than bronze powder which makes a harder casting which doesn't respond to the standard blue/green patina solution as well as copper. I sometimes blend copper and bronze powders together for an in between look. I encourage you to experiment and determine your own preferences.



#7 Demolding the head



#8 The demolded head



#9 Repairing the head with a pencil grinder



#10 Painting the inside of the head with metallic Forton MG

Now, back to the reassembled mold. This next step is not essential, but spraying light coats of two specific mold releases onto the alginate surface produces a cleaner casting when using Forton MG with metal powders. The first coat is Pol-Ease 2300 and the second is Synlube 531, which I dry with a hair drier for only about a minute. (See photographs #3 and #4.)

Next, measure a pint of VF-812 and dump it into a one-gallon plastic bucket. Using the same kind of pint container, scoop two pints of the metallic powder blend. With the electric drill and mixer, mix until smooth, which only takes about a minute. Dump half of the metallic wet mix into another bucket and set it aside. Add about a couple tablespoons of accelerant to the first bucket and mix for about 10 - 15 seconds. If the mixture becomes instantly thicker, you added too much accelerant and do not try to use it as it will probably set up before you can apply it into the mold. Assuming its consistency did not change, pour the mixture into the mold. While you can tip and rotate the mold so that the metallic solution coats the inside, you will have better luck if you use one of the 2 inch brushes to get an even, bubble free coating. Pay special attention to the ears. (See "Casting Perfect Ears" by this author, SJ, May 2004.) If you have large hands, as I do, having an assistant with small hands can be very helpful. (Photograph #5) Dump the unused half of the metallic mix back into the first bucket.

While the first coat is setting up, mix some plain Forton MG into the second bucket. A pint VF-812 and two pints of plain blend will probably be enough.

Just one coat of the metallic is sufficient if evenly applied. But to be certain that there are areas too thinly covered or not at all, I apply a second metallic coat. After about 10 minutes when the first coat will have set up to the point it no longer sticks to your finger when touched, mix in about half as much accelerant as used for the first coat in to the remaining metallic mixture and dump it into the head. Less accelerant is needed because the small amount that was in the unused part of the first batch will have been affecting the mix. As long as the Forton MG is liquid, you can coat the inside by tipping and turning the mold. (Photograph #6) But, as it thickens, you may have to use your gloved hand or one of the brushes to spread it evenly. Dump about a third of the new plain batch into the first bucket and stir. This will dilute what was left behind of the second coat keeping it from setting up and being wasted.

When the second metallic coat has set up, add another spoonful of accelerant to the first bucket along with a hand full of chopped fiberglass and stir. This mixture should be somewhat thicker, too thick to slosh around. Use a gloved hand and/or brush to apply. As soon as it has set up, repeat this step using the second 1/3 of the plain mix. To the remaining 1/3 add some accelerant but no fiberglass and use this last 1/3 to smooth off the inside surface. At this point the Forton MG should be about 1/4 of an inch (0.6 cm) thick which is plenty.

Earlier I said that the slow setting time of Forton MG is an advantage. It allows you to mix as much of the metallic or the plain mixes as required at one time. Then simply dump out what is needed for the next coat into a bucket; adding accelerant will make only this small amount set up. Repeat as necessary. With the much faster setting copy cats, you would have to measure and mix each batch separately which is more time consuming and tedious.



#11 The head, base and the all thread and copper pipe



#12 Applying the patina solution



#13 Buffing

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Wait about 2 hours before removing the mold. Pull back the alginate from the Forton MG at the edges of the mold. If the alginate separates cleanly and is not discolored, it's time. After you have cut through whatever you used to bind the front and back of the mother mold

together, the back should come off easily (Photograph #7). Carefully peel off the rest of the plaster and alginate revealing the cast head (Photograph #8). Because of the moisture in the alginate, a very thin layer of the surface of the metallic Forton MG may not have set up completely. Try to touch only the hair and not the skin where any damage to the surface would be more noticeably. I always rinse off the outer surface of the head in a shower and let it dry for a couple of hours before proceeding, at which point, the surface will have solidified.

You can always expect a little clean up to any casting such as bubbles in the alginate resulting in "outies" and bubbles in the Forton MG, "innies." The outies can be trimmed down using carving tools or an electric or air grinder (Photograph #9). Innies can be filled in by mixing a small amount of metallic Forton MG and applying as if putty. One of the really great things about Forton MG is that unlike plaster, it will bond to itself even after it has set up. With practice, you will be able to make repairs that are almost invisible.

Next turn the head upside down. Mix about 2 ounces (60 grams) of each of the 2 components of the casting foam and pour it into the head. The foam will expand almost 10 times. Add more as necessary until the head is filled to about the top of the neck. In order to make the inside of the shoulders, which may be visible when mounted, the same color as the outside, mix a few ounces of VF-812 with some of the metallic powder blend and paint the inside. Notice in photograph #10 in which I am doing this that the neck had been filled with foam.

All that was needed to complete the piece was a base, a way to attach the base to the head, and some final patina and buffing. Previously, to keep from purchasing expensive marble cubes for bases, I had made a mold of one such cube 6 by 6 by 6 inches (about 15 cms). To make the base for this project, I filled the mold about 2/3 full of metallic Forton MG. Of course any number of other things could have been used, depending on availability and budget. A Piece of 3/4 inch copper pipe looked like just the thing to attach the head to the base. The problem was that the 3/4-inch pipe is really 7/8 inch outside diameter. While 7/8 inch wood bits were readily available, a ceramic bit was needed to drill into the base and it seems that nobody makes a 7/8 inch ceramic bit.



#14 Pouring in some plain Forton MG with fiberglass to secure the head to the connecting all thread and copper pipe.



#15 The Finished head in the round



#16 A head that was cast in melted oil base clay and then significantly resculpted.

The solution was to drill 3/4-inch holes and use a piece of 3/4 inch all thread, 1 foot long, to connect the two parts. The 3/4 inch all thread just happens to fit inside 3/4 inch copper pipe which covered up the threads and made it look as if the head were attached by the copper pipe. Photograph #11 shows the parts ready for assembly.

Metallic Forton MG reacts more intensely to patina solutions the newer the casting is. Since I wanted the hair to be more green than the skin, the day after making the casting, I applied the patina solution to the hair. (Photograph #12). While still wet, I rubbed the hair with steel wool. The tiny pieces of steel wool, left on the hair, add an antique rusty color. It is best to allow the head to cure for at least three days before applying the patina solution to the skin parts. If the solution beads up, and doesn't want to evenly coat the surface, add a small amount of liquid detergent. As soon as the skin shows any sign of turning green, rinse off the surface and allow the head to dry. Using the finest steel wool, "0000", go over the entire head and remove excess green. It is best to do this outside as the dust contains chlorine and is not good for your lungs. Do not remove all the green nor try to actually polish the surface with the steel wool; rather use a cloth buffing wheel with the buffing compound. Do not over polish

or you may remove the skin texture. To prevent the surface from slowly darkening over time, spray on either matte or glossy clear acrylic. Paste wax can be applied as well, if you desire. The base and the copper pipe were polished the same way except that a black patina solution was used.

To attach the head to the base I drilled 3/4-inch holes into the foam in the head and into the base and epoxyed the all thread into the head at the right angle. As soon as it was secure I slid over the all thread a piece of copper pipe, which had been cut so as to be just long enough, to go from the foam to the base covering up the all thread. Since the all thread was glued to the foam only it was necessary to attach it more securely to the head. This was done by turning the head upside down and pouring several cups of plain Forton MG with fiberglass over the foam and then spreading it from the pipe to the sides. Once secure, the bottom end of the all thread was glued into the base and a piece of self-sticking felt was attached to the bottom.

There are some other things that I could have done with the mold rather than directly cast the head in metallic Forton MG. For example as I said at the beginning of this article, I could have cast it in plaster and given it a faux finish. Or I could have cleaned up the plaster and made a secondary mold in silicone rubber and then cast the final piece in Forton MG or any number of resins from metallic to clear. If for some reason I wanted or needed to do major rework to the head, I could have cast it in melted oil based clay as shown in photograph #16. In this case I changed the expression, removed some small wrinkles making her look younger, opened the eyes, and completely reworked the hair. I then made a mold of the reworked head in silicone rubber and cast the final piece (not shown) in metallic Forton MG.

The special effects industry regularly casts entire heads as an intermediate step in making costume masks usually a skull-cap is fitted on the actor to cover up the hair. This simplifies the casting and allows for the use of skin safe silicone rubber, which clings to hair much more tenaciously than alginate. (See (How to Cast a Ballerina's Foot," by yours truly, SJ, Jan, 2005). The advantage of this rubber is that the mold can be used over and over and stored for years.

A head in the round might be a little intimidating for someone just starting life casting. But I would encourage giving it a try. It might take you to a whole new level.

David Parvin is a Colorado sculptor whose primary subject is the human form in a variety of materials. He also teaches life casting workshops held throughout the year. He may be reached at 303-321-1074.
