Cuff Bracelet

By: Thomas J. Tessier

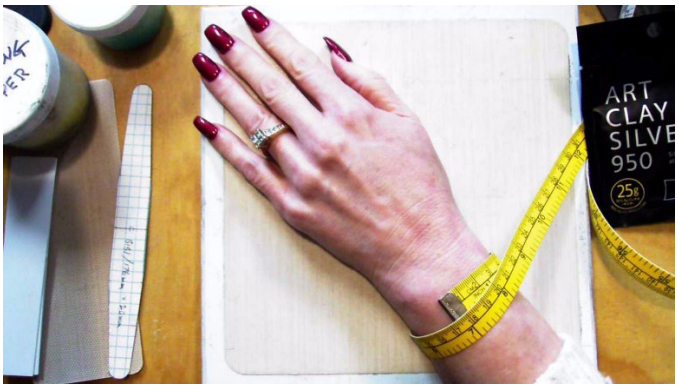
Equipment Used:

1. 50 gms of sterling silver metal clay – I'm using Art Clay Silver 950 (Sterling Silver).
2. Small amount of Paste Type (you'll need to make)
3. #2 flat artist brush
4. #2 round artist brush
5. Non-stick work surface – Teflon, Tuff Card, Ceramic Tile, or other
6. Large roller frames, plastic slates, or playing cards
7. Clay roller of your choice
8. Clay pick for cutting clay
9. Clay cutter
10. Hobby knife
11. Pair of small scissors
12. Ultra Fine Sharpie marker
13. 600 grit wet/dry sandpaper
14. Course/Fine sanding sticks
15. Heat source to dry clay – food dehydrator, electric grill, or air dry dryer
16. Heat source to sinter the clay – programable kiln
17. Means to burnish project – large rotary tumbler
18. Cloth metric tape to measure wrist
19. Wrist Mandrel – Wood or Metal (Preferable)
20. Paper file folder, preferably with grid lines
21. 300 mm steel metric ruler (shorter will work)
22. A selection of dichroic glass cabochons
23. 2-part Epoxy or E6000 adhesive
24. Nylon Forming Pliers
25. Notepad & pencil

The purpose of this article is to discuss the fabrication of a simple sterling silver cuff bracelet.
I will be using Art Clay Silver 950 (Sterling Silver) to make this bracelet. Fine silver is too soft to use for cuff bracelets. Working with cuff bracelets requires some special tools. Like making anything, the right tools make life a lot easier. You can go on the cheap and use alternative ways of making a bracelet, but for simplicity and the time saved, it's worth getting the right equipment.
Before going any further make up some sterling silver paste. Simply take a pea sized piece of sterling silver clay and combine it with a little water using an eye dropper. Use your small spatula to mix the clay and water together in a small airtight container to the consistency of heavy whipping cream.

Step #1 - Gather information and design your bracelet.

First, you'll need to determine the size of the cuff bracelet needed. One method is simply to use a metric cloth tape and measure the circumference of the wrist that the bracelet is being made for (Figure 1).



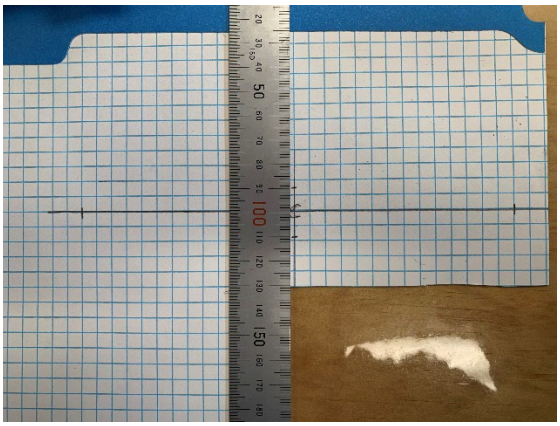
From this figure you can see that the circumference of this wrist is 173 mm. For a cuff bracelet there needs to be an open space where the bracelet can be slid over the wrist. A typical opening should be around 25 mm. You'll also need to take into consideration the shrinkage of the clay when firing the piece. For Art Clay Sterling Silver 950 a good number to use is 15%. The instructions that come with the clay state the shrinkage is 10-13%. That hasn't been my experience and when we make this bracelet we'll measure the length of the bracelet in the greenware state and then again after we fire it to determine the actual shrinkage, just for fun. So how long should the bracelet be? Here's the mathematical formula:

Length of Bracelet = (Circumference of Wrist + Thickness of Bracelet – Size of Opening) / (1-Shrinkage%)

Length of Bracelet = (173 mm + 2 mm – 25 mm) / 0.85

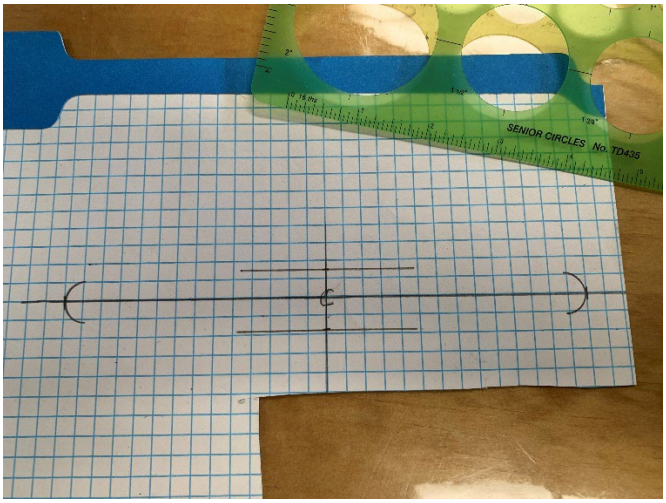
Length of Bracelet = 150 / 0.85 = 176 mm

So the bracelet needs to be 176 mm in length in the greenware state. Next, we need to design our bracelet template. A paper file folder works well for this purpose. I like using the type that has a grid pattern on it. This really helps in getting a visual reference on your design. We know from the preceding calculation that the length of the bracelet needs to be 176 mm. What about the width of the bracelet? That's a personal determination, but let's use 20 mm for this one. Therefore, your piece of file folder needs to be at least 176 mm long and 20 mm wide. Start by drawing center lines. One down the length of bracelet and one perpendicular to it representing the center of the length (Figure 2).

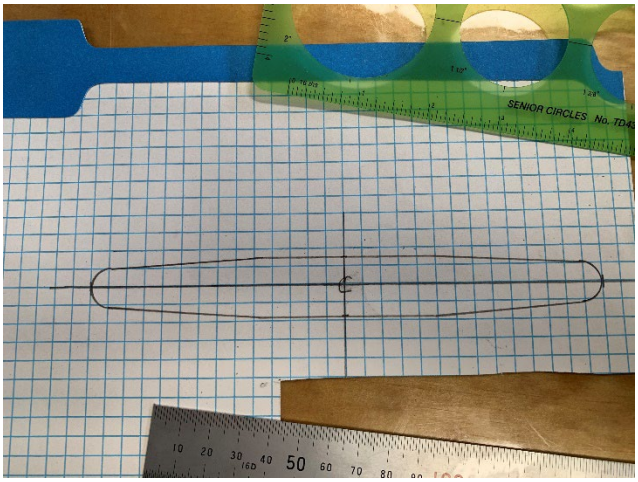


Next place marks representing the ends of the bracelet. Since the bracelet is 176 mm long, half of that (176 / 2) is 88 mm. Therefore, make marks 88 mm out from center, as shown in the preceding drawing. Also put marks out 10mm to each side of the center line to indicate the width of the bracelet. See preceding drawing.

Now you simply need to determine the shape of your bracelet. Is it going to be 20 mm the entire length of the bracelet? Tapered? Wavy? I'm going to make the center 30 mm of the bracelet 20 mm wide, then taper it down to the ends. Terminating the ends with semi-circles (Figure 3).

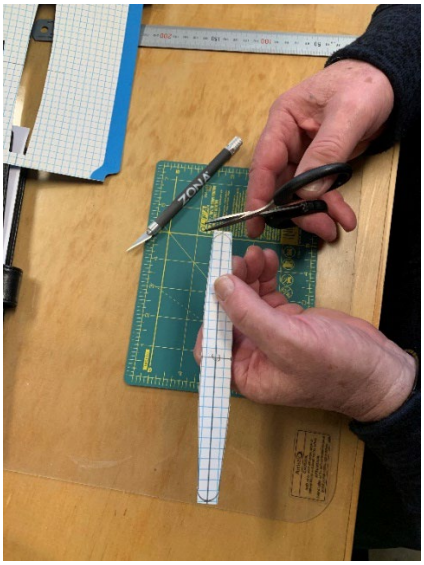


I used a circle template and picked the ½ inch circle to make my semi-circles. Next draw the lines from the circle to the lines that represent the middle part of the bracelet. Your drawing is now completed (Figure 4).

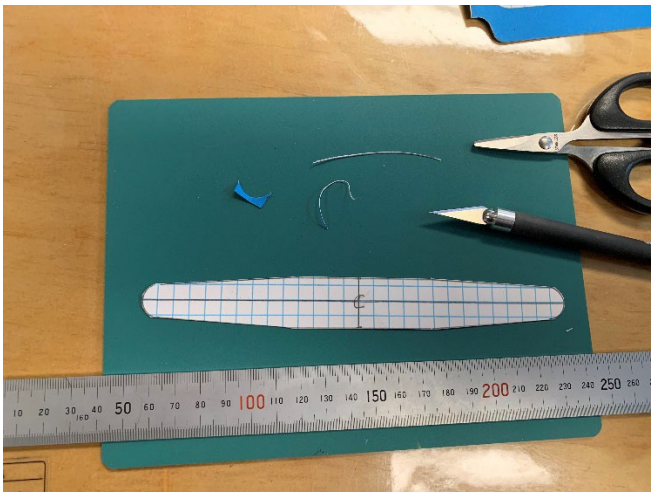


Use a sharp hobby knife with a #11 blade and a steel ruler to cut the straight lines. Cut on a piece of wood or use a healing cutting mat (Figure 5).

Use fine scissors to cut the rounded ends (Figure 6).



You now have your template made and you are ready for the next step:

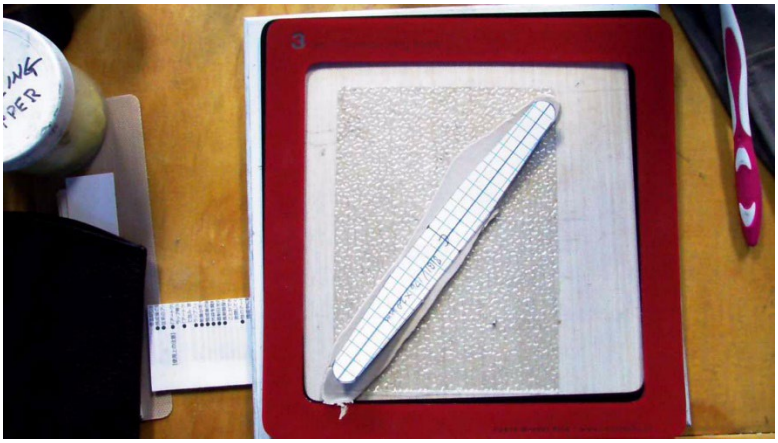


Step #2 – Choose a texture and roll out your clay

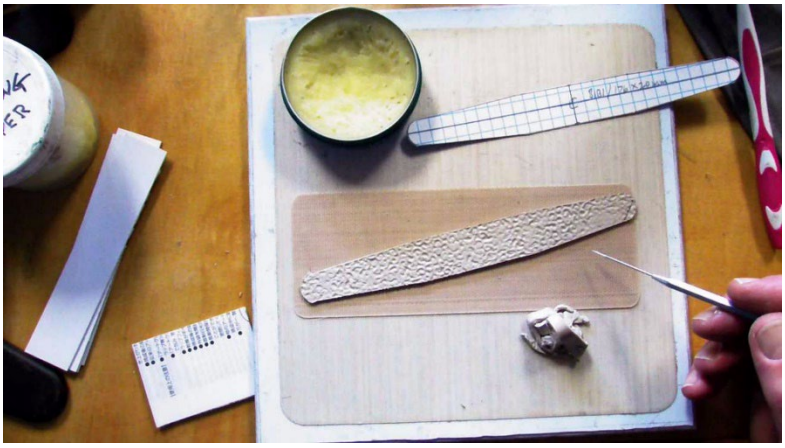
Texture, again is a personal call. I just reached into my texture drawer and pulled out an arbitrary low profile texture. We are going to be fastening some fused glass onto the surface, so a low profile is preferable. Verify that your texture plate is large enough to fit your template on it. Also remember to a apply a release to the texture. Applying it with a toothbrush makes sure you get down into all the nooks and crannies. (Figure 8).

Notice that I'm using extra-large rolling frames and a large roller. These items are available from Cool Tools (www.cooltools.us). With this setup I can roll the clay in any direction without having to move any guides or clay. Use the appropriate guides to roll your clay to at least 2 mm (8 cards) thick.

Next roll 50 grams of clay into a log and lay it on your texture plate, then roll it out (Figure 9).



Remove the clay from the texture plate and lay it on to a teflon sheet, tuff card (from Cool Tools), or ceramic tile. Lay your custom template on top. Hold it in place with a couple of fingers and cut around the template with a needle tool. (Figure 10 & 11)



Step #3 – Dry your clay and sand

Your bracelet is ready to dry. How you dry it will depend upon how much warpage is acceptable and how you plan to proceed. Air drying for at least 24 hours will create the least amount of warpage. If it's important to have almost a perfectly flat piece, then air dry it. Why do we care? Next, I'm going to show you how to incorporate a clay braid around the perimeter of the bracelet. It's pretty cool, but you have to cut a perfect

channel around the perimeter first. If your piece isn't almost perfectly flat, it's very difficult to make the required channel. You'll understand better a little further on.

If you decide to dry your bracelet on a hot plate or in a food dehydrator then you need to understand why the clay warps and how to reduce or eliminate it. If your piece is resting on a tuff card, telflon sheet, ceramic tile, etc. the water in the clay can't evaporate through what it's resting on. What it's resting on is a water proof barrier. The only path the moisture can take is out the top or sides of your piece. If you simply leave your bracelet (or other project) on a surface, you'll notice over a relatively short time the piece will start to warp. If you are paying attention, you'd notice that it will always warp down. That is, the piece will curl and make a concave down shape. Like an upside down cup saucer. What's going on is called fluid dynamics. Let me explain without all the mathematics. If you have a drop of water on your table and you lay a piece of toilet tissue on top of it, what happens? The drop of water immediately gets absorbed by the tissue right? Why? It's called capillary action. The water molecules are attracted to the paper fibers. The water will keep getting "sucked" up by the tissue until all the water has moved from the table to the tissue. Same concept with your clay. The only path for the water in the clay to go is up and out. When you heat the clay, the water in the top layer evaporates and leaves a layer of dry clay. That dry clay layer is now like the tissue paper. It sucks up the layer below. That layer is now dry and sucks up the layer below it…and so on and so on, down to the bottom next to your barrier. The layer next to the barrier therefore is the first part of the clay to fully dry. As we know, when clay dries, it shrinks. All of the shrinkage starts at the bottom, hence the cupping down. The hotter and faster the drying, the more the clay will warp.

If you want to reduce the cupping (warpage), simply remove the piece from it's barrier as soon as possible. In a food dehydrator the shelves are not solid, they are actually grills (Figure 12).

I don't leave my projects on the drying surface for more than 5-10 minutes. I then take them off the barrier and rest them directly on the shelf. When the project is resting directly on the shelf the water can evaporate equally out all sides. The center of the project is what dries first, not one side. Warpage is almost completely eliminated. If your using a hot plate about the only thing you can do is flip the project over often. This is why I don't use a hot plate.

Once your bracelet is dry it's time to sand it. You'll need to sand the edges and back (bottom) with some 600 grit wet/dry sandpaper and/or sanding sticks. I like to use beauty supply sanding sticks. (Figure 13). They come in various grits like sandpaper. You can buy them at your local beauty supply store or online from various sources. I've also purchased this same brand of sticks online from Amazon.

I like using a "Tidy Tray" and a large rubber block to work on. The tray catches all the dust, which I can then recycle into paste. The Tidy Tray is available from Amazon (www.amazon.com). The blocks come from Art Clay World (www.artclayworld.com) Another handy tool is a short stiff bristle brush. They work great to clean your sanding sticks and files. (Figure 14) I'll let you guess where you can buy them.

To sand your edges perfectly straight up and down use a small block of wood. Hold the sanding stick against it and sand the clay. Hold the clay on the rubber block with your fingers. (Figure 15)

After sanding the edges, proceed to sand the back (bottom) with some 600 grit wet/dry sandpaper. Don't bother to sand with any finer sandpaper, it's a waste of time. As soon as you fire your greenware, the sintering will destroy all your hard work. If you want a smoother finish, sand with wet sandpaper after you've fired the piece.

Step #4 – Pre-firing preparation

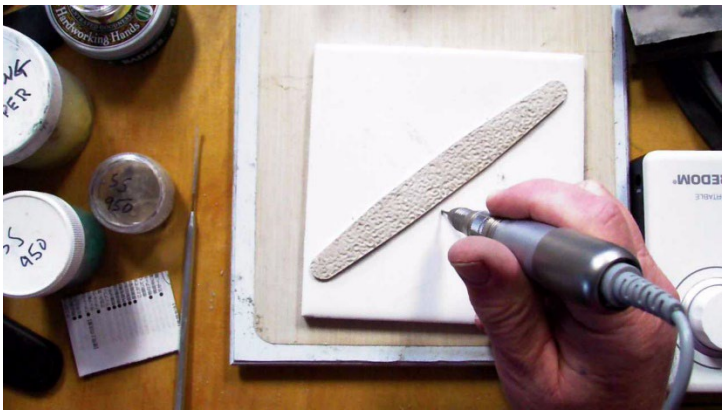
Now you need to make a decision. You can fire your bracelet now as is, or you can pretty it up some more. For example, you can simply round the edges with some sandpaper for a different look and feel, or you can add a classy looking border around the perimeter, like a clay braid. If you are up for the challenge, this is how you make a good braid border:

First you need to cut a channel around the border, so the braid has somewhere is lay. Then extrude some clay and make a braid and fasten it to the bracelet with some paste type, that you already made.

To cut the channel, the easiest is to use a 2 mm ball burr in a power tool and simply run it around the perimeter of the greenware. Foredom Electric (www.foredom.net) makes some fantastic flex shaft tools and portable micromotors. Here's a photo of my micromotor kit:

This micromotor is powered by a rechargeable control unit. The control unit is the white box on the top. That knob controls the speed of the tool. Jewelry burrs can be purchased from just about any jewelry equipment

company (e.g. ottofrei.com, riogrande.com). You can buy the burrs individually or in sets. To cut the channel around the bracelet, first lay the bracelet on a sheet of glass or a ceramic tile. Hold it in place with one hand and use the power tool to travel and cut counter-clockwise around your piece. (Figure 17)



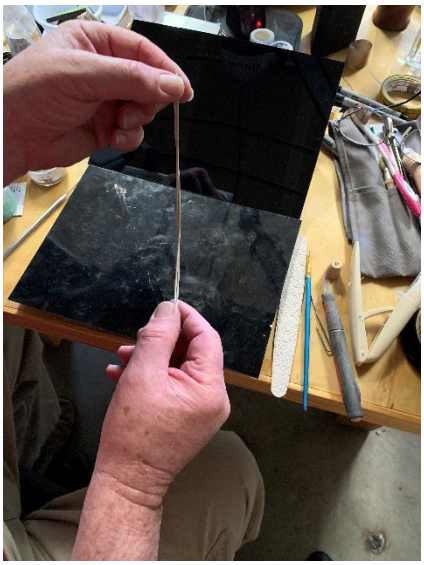
Power tools turn clockwise, so going counter-clockwise will push the cutting edges against the clay. If you go clockwise, the tool will try to run away from the clay. USE VERY LITTLE PRESSURE. This cutting tool cuts the greenware like a hot knife in butter. Once you learn how to use it, you'll never go back to manual methods. Manual methods? How can we make this channel manually? Simply start out the same way, with the greenware on a hard surface and use a small round diamond file. The file should be about 2 mm in diameter. (Figure 18)

Once you have made the channel, the next step is to extrude some clay into a couple of strands. If you load some clay into an empty 3 ml syringe, it will extrude a strand about 1 mm in diameter. Two strands twisted together would therefore be about 2 mm in diameter, just what we need to match our 2 mm thick bracelet. To load the syringe, first suck some clean water up into the barrel. Squirt it out and remove the plunger. Take some sterling silver clay and roll it with your fingers into a log that will just fit inside the barrel of the syringe. Once you have the clay in the barrel you can reinsert the plunger and use your fingers to push down on the plunger. I've found that doing it this way is really challenging. It's extremely hard to force the clay out, but not impossible. I used to do it this way, until I found a God send It's called a "Syringe Pen" and is made by Prometheus, which is a company in Turkey. They are sold here in the United States through several distributors, or you can order them directly from the company (www.prometheushobby.com). In the U.S. they

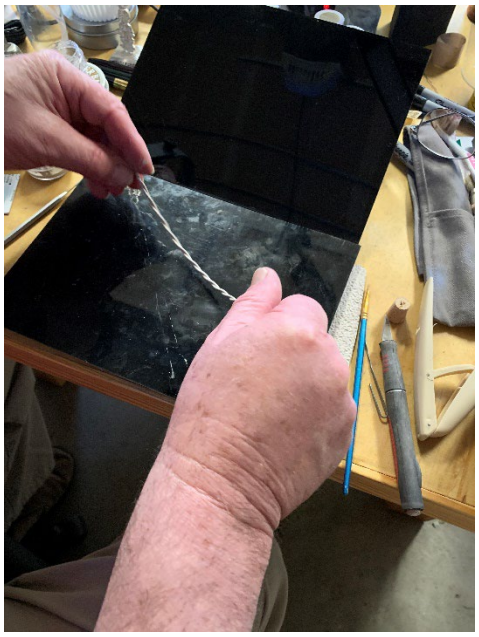
can be purchased from Fire Mountain Gems (www.firemountaingems.com), Art Clay World (www.artclayworld.com), and other distributors. (Figure 19 & 20)

The syringe pen uses leverage to push the plunger down. You load the clay into an empty 3 ml syringe like before, but remove the rubber cap from the plunger and put it on the special plunger that comes with the Syringe Pen. To extrude the clay, simply squeeze down on the handle. The clay extrudes with almost no pressure. (Figure 21)

Extrude two strands about 5-6 inches in length. Pinch the two strands together on one end. Hold the two strands vertically and let them hang down. (Figure 22)



Now pinch the lower end of the strands together. Both the upper and lower ends should now be pinched together. Now turn your hands parallel to your work surface. Twist the right side clockwise, then the left side. Twist slowly, when you can't twist any more, set the strands on the work surface and readjust your hands for another pass at twisting. (Figure 23)

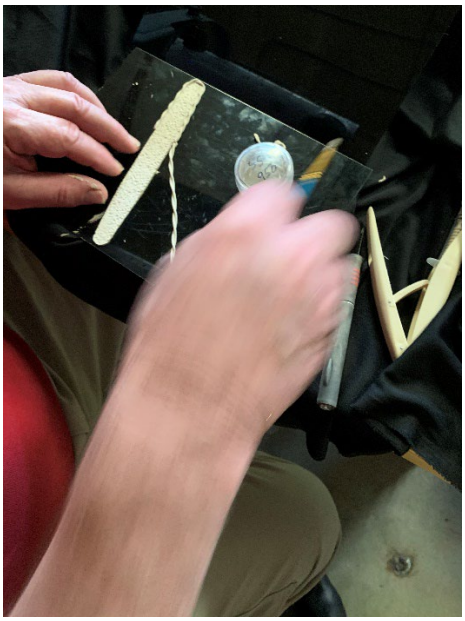


Once your braid looks like you want it, set it down on your work surface. Using a small paint brush coat the surface of the braid with water so it doesn't dry out and break while you are working with it.

Next, using a small paint brush, brush on some paste type into the channel where you are going to lay the braid. (Figure 24)

Now place your bracelet back on your work surface. Lay the braid up against bracelet where you added the paste type. Push it into place with your paint brush (Figure 25)

With the bracelet still on your work surface, apply a little paste to everywhere that the braid touches the bracelet. Only do it on the side that is up. Don't try to lift the bracelet, the braid my fall out. Place the entire work surface with the bracelet on it, into the food dehydrator. Leave for at least10 minutes to help dry the braid and paste. After 10 minutes bring the work surface back out and start another braid. Once you have it made repeat what you did before. Twist the new braid to match the first braid. Then cut off one of the pinched ends. Add more paste to the channel where you are going to lay this new braid. Add paste to the end of the first braid. Now place the new braid up against the first braid and twist the end to line up the strands. (Figure 26)



Using your paint brush, push the rest of the new braid into place. Cut off the remaining pinched end if you haven't already done so. Repeat this process as many times as you need to, to finish the braid all the way around the perimeter. Once the brand is thoroughly dry, flip the bracelet over and apply past to the braid everywhere it touches the bracelet. (Figure 27)

Remember we were going to determine the actual shrinkage, just for fun? Our completed greenware piece is 178 mm long and 27 mm wide as you can see in Figure 27. We'll take these measurements on the fired bracelet and determine how much it shrank.

Step #5 – Firing & Finishing

The instructions that come with the Art Clay Sterling Silver 950 state the following firing schedule:

1. Start with the kiln at room temperature.
2. Slowly ramp up the temperature to 932º F (how slow is slowly?)
3. Hold the temperature for 30 minutes.
4. Raise the temperature to 1,598º F (How fast?)
5. Hold for 60 minutes.
6. Let kiln cool down to room temperature.

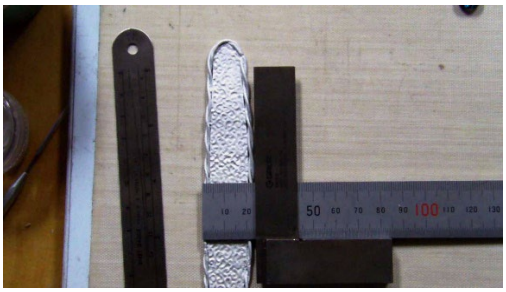
From my personal experience, I found that this this firing schedule will under-fire the clay resulting in bracelets that will break when you attempt to bend them. I've revised the schedule per the advice I received from Master Instructor Katie Baum of Art Clay World as follows, and have had no problems since:

1. Start with kiln at room temperature
2. Ramp up temperature at a rate of 1,000º F per hour.
3. Hold at 950º F for 30 minutes.
4. Ramp up temperature at a rate of 1,000º F per hour.
5. Hold at 1,600º F for 120 minutes.
6. Let kiln cool down to room temperature.

When the bracelets were fired with this schedule it was easy to bend them on the wrist mandrels.

After firing your bracelet, tumble it for at least 1-1/2 hours in a barrel tumbler for the best results, (Figure 28)

This is what it looked like after tumbling. (Figure 29 & 30)

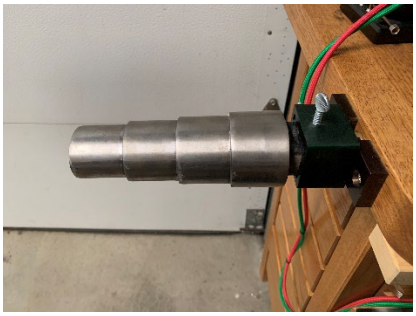


Note the fired sizes. How much did it shrink?

	Length	Width
Greenware	178	27
After Firing	152	24
Change	26	3
Shrink Percentage	14.6%	11.1%

As predicted, based upon prior experience our bracelet shrunk 14.6%, or 15% rounded up. So in your future calculations use 15%.

After tumbling, dry off your new shiny bracelet and bend it on a wrist mandrel. I personally like metal mandrels, but a wooden mandrel will work also. (Figure 31)



This is a stepped oval wrist mandrel. This can obviously accommodate a number of different sized bracelets. Which step should be use? Do you recall we measured the circumference of the wrist that this bracelet is going on (173 mm). Simply put the cloth measuring tape on the mandrel and find which step is around 173 mm. (Figure 32)

Looks like the second step up is 170 mm in circumference. Close enough! That will be the step where we stop bending the bracelet. I usually start on the largest step and work my way down to my target step. I can easily bend the bracelet with my fingers. No need for a hammer or tools.

After shaping the bracelet on the mandrel, do you recall how big we wanted the gap to allow the bracelet to be put on? (Figure 33)

25 mm exactly, what luck!

Once you get the bracelet shaped to your satisfaction start adding the dichroic glass cabochons. I make my own cabochons in my shop. If your interested in dichroic glass there is an outstanding book written by Jackie Truty called "Dichroics Art Clay Glass All Dressed Up." It has an excellent history of dichroic glass and how it's made and why it was made. I found my copy on Amazon.

You can attach the cabochons with E6000 adhesive or a two-part epoxy, like Vigor Jewelers Epoxy. Both of these products can be purchased at Amazon. (Figure 34)

Leave the bracelet on the mandrel to hold it in position while attaching the stones. (Figures 35)

I usually attach the center cabochon first, then let it set for 30 minutes to allow the epoxy to set-up. Then rotate the wrist mandrel to one side or other and attach the next stone. After another 30 minutes, rotate it the other way and attach the last stone. Leave the bracelet on the mandrel for 24 hours for the epoxy or E6000 to fully cure.

The final step is to place the bracelet on the wrist it was made for and make any last-minute adjustments. Most wrists are not exactly the shape of the wrist mandrel. Some final tweaking is usually necessary. The easiest way to do this is to use a pair of Nylon Forming Pliers. They are available from most jewelry equipment suppliers (ottofrei.com, riogrande.com, amazon.com, etc.) (Figure 36)

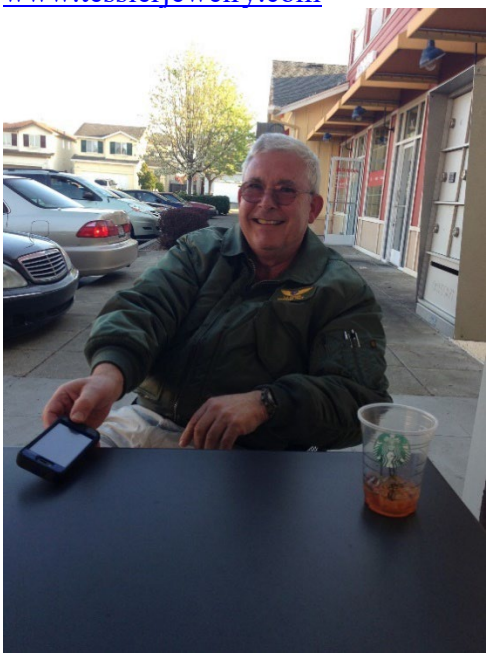
Here's a photo of the completed cuff bracelet on the wrist of our model. (Figure 37)

A well made bracelet like this should last a life time.

I hope this article will inspire you to experiment with sterling silver clay and peak your interest in making your own glass cabochons.

Author:

Tom studied jewelry art at the Revere Academy of Jewelry Art in San Francisco, California in 2017 and graduated as a "Graduate Jeweler. Subsequent classes were taken at Silvera Jewelry School in Berkeley, California. One of those classes was an introduction to Art Clay, taught by Master Instructor Arlene Mornick. Additional Art Clay classes were taken with Arlene as well. In 2018, Tom received his Level One Certification and Senior Level Certifications. Tom teaches primarily in the Sonoma County area of California, one of the great grape growing areas in northern California. Tom's website and contact information is at: www.tessierjewelry.com



Artist Philosophy:

Discovering metal clay has been one of the greatest joys in my life. I'm just amazed at how easy it is to work with and what beautiful pieces can be created in a relatively short amount of time compared to traditional jewelry. It's like magic. I'm so looking forward to taking more art classes that can be combined with metal clay and teaching what I've learned to others.