

Getting Started with BRONZclay

By Mardel Rein - Updated 10/22/08

BRONZclay can be worked with nothing more than your fingers, but much more interesting and sophisticated jewelry and sculpture can be created with the addition of a few simple tools. Our list of basic tools will serve as your core tool kit. Additional tools can be gathered from every room in your home to texture, form and shape your BRONZclay creations, and nature offers an endless supply of textures, shapes and ideas to draw from.

For those who work in silver clay, you'll need a separate set of "dusty" tools for BRONZclay to avoid cross-contamination. Unfired dust and bits of BRONZclay must be kept separate from silver clay. Needle files and diamonds files should have a set dedicated to BRONZclay. Brushing the dust off the tools is not good enough. The tools must not mingle. The rule is easy: if the tool creates dust or if dust builds up on it, keep a separate set for BRONZclay.

After the metal is sintered, files, sanding sticks, polishing papers and other metal working tools can be used both on silver and bronze.

Tip: Cool Slip sprayed on a cleaning cloth makes an excellent cleaner for removing metal clay residue from tools and provides an anti-stick coating at the same time.

Tip: Keep a sanding tray handy with all your BRONZclay sanding tools in it. Use the tray in your lap or in your sweeps drawer as you work. The entire tray can be moved out of the way when not in use.

Basic BRONZclay Tools

[Cool Tools Product Code: KIT-401](#)

Worksurface - Teflon, laminate, glass, silicone all make great surfaces

Claymate Hand Conditioner - To keep clay from sticking to your hands

Cool Slip Anti-Stick Spray - Releases clay from textures, surfaces

Lavender Oil - Use to make Lavender water to inhibit oxidation

Rolling tool - To roll out slabs of clay

Cards - Use to gauge the thickness of the clay

Needle Tool - For cutting clay

Scalpel or Xacto Knife - A craft knife that can be used to trim, sculpt, cut the clay when wet or dry

Tissue Blade - To cut long strips of clay

Palette Knife - Use to mix paste, cut clay, smooth edges

Mixing Plate - This is a small disc used to mix the paste

Snake Roller - Used to roll out lengths of clay snakes

Blending Tool - Silicone tipped tool for blending clay

Paint Brush - A good quality brush to apply water to the clay

Rubber Bench Block - For working and finishing

Swivel Vice - To hold drills for making holes

Drill - 2.5mm and 3mm drills for drilling holes

Diamond Tweezers - For handling gems and small parts

Bent Tip Tweezers - For gems and small parts

Sponge Sanders - Use to shape and refine the dry clay

Millimeter Gauge - To determine firing schedule of the clay

Wet/Dry Sandpapers 220 & 400 grit - For finishing

Polishing Papers - For finishing to a high shine

Polishing Cloth - For polishing

Cling Wrap - For air-tight wrapping of the clay, the thickest you can find

Water Dish - To hold water

Sanding Tray - To catch the dust and bits when sanding, carving and shaping dry clay

Miscellaneous - Straws of various sizes to use as mandrels, rubber band or clips to hold clay balls closed

In addition to these tools, of course, is an endless list of texture and tool possibilities that you can add as you go along.

BRONZclay Packaging

BRONZclay comes packaged in blocks of 100 grams and 200 grams. There is no paste, syringe or paper currently available.

BRONZclay Storage

Keep your BRONZclay happy and fresh by storing it in the refrigerator. BRONZclay prefers to be cool and stiffens when it warms, so unopened packages should be stored in the refrigerator. For opened clay, wrap tightly to exclude air, clip, and then place in a plastic bag with a damp sponge. Place this bag in the refrigerator. If you have a home sealer, you can wrap the clay tightly in cling wrap and seal the clay ball in a pouch and refrigerate.

Ideal Workspace For BRONZclay

BRONZclay prefers a cool, moist environment. Most basements make great metal clay studios because they offer naturally cool temperatures and high humidity. A cool room (72F or cooler) with good humidity (at least 50%) and indirect natural light is ideal for BRONZclay working. If you do not have perfect BRONZclay conditions in your studio, you can simulate them. Use a humidifier to increase the moisture in the air. Set the temperature to 72F. Avoid warm rooms. BRONZclay stiffens as it warms, so the warmer the room, the harder the clay will be to work with. Do not work outside or in direct sunlight. Drafts or air blowing across your work area or from overhead will accelerate drying of the clay. Air conditioners and heaters both dry the air, so add humidity when running either appliance.

A work space can be anything from a tray on your lap to a dedicated studio designed and built for metal clay work. At the very least, you need a comfortable chair, good lighting, a work surface and magnification.

Comfort is essential in creating. A chair that puts a hitch in your get-a-long will probably put a hitch in your metal clay productivity and enthusiasm as well. I use an adjustable height chair because my bench needs to be at different heights for different tasks. An adjustable height chair allows me to stay at one workplace with one chair and do multiple tasks. When I'm working in wet metal clay, I want my chair at desk height. When shaping, filing, sanding, drilling, polishing at the bench pin, I want my chair much lower so my bench top is about 4" lower than the top of my shoulder. Not all adjustable chairs have the full range of adjustment needed, so try out a chair before you buy it and make sure you have all the travel you need.

If you have the luxury of space, you can set up different work stations for different tasks and provide the right chair for each station.

The type of lighting needed depends on the job at hand. Indirect natural lighting is the first choice for general clay working. If artificial lighting is needed, choose full-spectrum or daylight balanced bulbs if you need to purchase lighting. Daylight and full spectrum bulbs offer economical natural-looking light to brighten things up without adding heat to a room. If you have only overhead lighting, you might consider an articulated task light that can be set at any height or angle and use cool, low-wattage bulbs. A graphics or drafting type light or and Ott Lite is a great choice.

The x-ray vision I had as a kid is long gone. I use 2.5+ readers for general work, an Optivisor for fabrication, soldering, polishing, finishing, etc, and a 10 power loupe to inspect stones and other super fine details.

BRONZclay Handling

BRONZclay is very stiff right out of the package and must be kneaded to make it soft and pliable before it can be worked. Fresh BRONZclay can also be somewhat sticky, so you will need to condition your hands with something the clay will not stick to.

BRONZclay contains water, so a water-repellent coating is needed to keep the clay from sticking to your hands. Some use straight olive oil, others use balms made from olive oil such as Badger Balm and Burts Bees. Cool Tools makes Slik which is a soy-based balm and Claymate which is a cream. Both products were formulated for metal clay and do not contain olive oil.

Try what you have on hand and see how it works for you. If your hands become stained, try something else until you find the best product for your skin type. When you have the right release, there will be no staining or sticking. [Click here to visit our anti-stick products.](#)

Petroleum Products

Do not use any type of petroleum-based product with BRONZclay (or any other metal clay). Vaseline is a petroleum jelly, so it cannot be used as a release. Do not use industrial lubricants such as WD-40 or silicone spray lubricants.

BRONZclay Conditioning

I start by testing the clay surface for stickiness. I press my finger lightly on the clay. If any clay sticks, I let the clay sit for 30 seconds or so to allow some of the moisture to evaporate from the surface. Test again, and when my finger comes away clean, I turn the lump over and let the other side evaporate a little so it's not so sticky.

A 100 gram package contains a single bar of clay. A 200 gram package contains two 100 gram bars that are scored in the middle for easy separation. I work with 100 grams at a time. If I have a 200 gram pack, I wrap one of the 100 gram bars in cling wrap and set aside while I knead the other one.

I break a 100 gram bar in half and stack the two halves. I use my thumbs to press lightly from the center outward to form a patty about 1/4" thick. I avoid touching the outside edges of the clay which are very moist and sticky. I also go very lightly so I don't break through the "crust" of the surface.

Once I've formed a rough patty, I fold the sticky outer edges to the center of the patty and then continue folding the edges in until I have a nice ball.

Now all the wet sticky parts of the clay have been worked in and I can freely touch the clay without any staining on my fingers. I knead the clay until pliable and smooth and then roll it into a ball and place in the center of a 12" x 12" sheet of cling wrap. Twist the plastic around the ball and wrap the excess plastic around that. I hold the plastic in place with a chip clip or some other large-sized clip or rubber band and set it aside to rest.

It's important to allow the clay to rest after kneading because working it with my hands heats up the clay. BRONZclay stiffens as it warms, and even body heat is enough to stiffen the clay. Keep in mind that the binders in BRONZclay are different than those in silver clay, so this is a property unique to BRONZclay. I like to keep 2 balls of clay so one can rest and cool while I use the other.

Lavender Water

Put a drop of pure lavender essential oil in your water dish (1 or 2 drops per 1/4 cup of distilled water). Lavender slows the oxidation of copper. Use lavender water to re-hydrate, make paste and moisten BRONZclay. I've kept a dish of water for several days with no signs of oxidation. If you black beginning to form at the bottom of your water dish, make a fresh batch.

Distilled Water

Use only distilled water when working with BRONZclay to avoid contaminating the clay with impurities from well or city water supplies.

Re-hydrating Clay

BRONZclay can be rehydrated to add moisture to a working lump or to make clay or paste from totally dried bits and filings.

Lump clay is re-hydrated regularly during a working session as needed. I re-hydrate lump clay several times over a work period, and it's very easy to do. One caution, though, trying to re-hydrate too large a lump at once can lead to a muddy mess. I can rehydrate about 50 grams at a time. First make a patty about 4 cards thick. Use your fingers and your calibrated eye; it doesn't have to be exact. Paint water

over the clay patty, avoiding the very edges. The patty should just be moistened, not dripping. Fold the edges into the center, being very gentle and watching for water that might want to ooze up in the center. If you have the right amount of water, there will be no oozing. If some water oozes out the middle, blot it off so you don't end up with mud. Keep your fingers on the dry clay, folding in the sides of the patty, pressing them down and working into the middle of the ball. Then knead until smooth and pliable. At this point, I wrap the clay and let it rest so the binders can fully absorb the moisture. If you add water and the clay still feels too dry, add more.

Dried bits and filing can be re-hydrated to make paste or lump clay. The filings must be clean and free of foreign particles. Some sandpapers and salon boards shed abrasive particles as they are used, so you may wish to use only the bits from filing and carving. I use a mortar and pestle to grind the clay bits into powder, then add in distilled water a few drops at a time (I use a dropper). Stir with the palette knife. Add in more water as needed to form a dough. Once a dough is formed, use a mini bowl scraper to turn the clay out onto a piece of cling wrap, wrap tightly and allow to rest..

Tip: Make a drilling block from BRONZclay. When you want to drill a clean hole in dry clay, you need to drill all the way through the clay and out the other side. If you drill into a block of the same material, you will create dust of the same material, which means no contamination of a foreign material. Here's how to make a drilling block: Form a slab of BRONZclay 1/2" thick and cut into a square or circle. Air dry for the first hour, turning the piece every 15 minutes for even drying. Then place in dehydrator and dry as normal or, leave to air dry. A 1/2" thick piece will take about 6 hours to dry in a dehydrator and several days to air-dry completely.

Paste Consistency

BRONZclay does not sinter well when too much water has been added, so I aim for the consistency of peanut butter when I make paste. I mix paste on a flat surface using a palette knife. I use a flat disc that I hold in the palm of my hand. The disc is a really handy way to make and use the paste. I use the palette knife to cut a small bit of clay off the lump and wipe it onto the disc. I paint the clay with lavender water (lavender water keeps the clay from oxidizing) and mix into the clay with the palette knife. I make up just what I want for the moment and always have fresh paste that is the exact consistency I need. I like the acrylic disc because the paste stays put when it's wet and slides right off when dry. The paste can be allowed to dry and re-hydrated for use later.

Burnable Forms

Burnable forms give support during creation and drying. When you fire pieces formed over cork clay, paper clay or any other combustible form, be sure it is properly supported during firing. The burnable forms offer no support during firing. Be aware that cork clay does not completely burn out in a BRONZclay firing. Creative Paper Clay leaves a residue of volcanic ash.

Place your pieces in the firing pan so that gravity has the least chance of collapsing the form. Use an appropriate thickness for the item to support itself. A head for physics will help, but whatever item you make, keep in mind that it needs to have integral strength in the design and thickness to maintain it's shape during firing. Larger pieces need to be thicker than smaller pieces, but too thick will cause a collapse from the weight. Here are some thickness suggestions for support using a domed disc as an example:

| Disc Size | Minimum Card Thickness |
|------------------|-------------------------------|
| 1/4" | 2 |
| 1/2" | 3 |
| 3/4-1" | 4 |
| 1.25-1.5" | 5 |
| 2" | 6 |

Situate pieces in the firing pan so that they do not have the pressure of gravity working against them. A domed disc should be placed so the dome side is down in the carbon, horizontally. Lentils, on the other hand, are two domes put together. They should be oriented vertically to counteract gravity. Round beads only need to be thick enough to support the span of their circumference.

Attachments

If you want pieces to bond, attach the parts with lump clay or very thick paste made from lump clay. Pieces can be added when wet, or when dry. To paste dried pieces together, first moisten the areas to be attached with a damp brush, apply the clay-paste to one or both of the parts and press the parts together so they "seat", but do not use excessive pressure. If you used a generous amount of clay/paste, some of it may squeeze out from the joint. You can use a clay shaper to rub this in now or file it smooth later.

Extruders & Syringes

BRONZclay extrudes beautifully through syringes and extruders. The clay should be freshly conditioned and have a soft, pliable texture before loading into the extruder or syringe. Extruding through a syringe can be a challenge to those with weak hands, but our syringe accessory makes it much easier. As a test, I extruded BRONZclay from a syringe onto a pre-formed ring. No attempt was made to adhere the syringe. It was just extruded, dried and fired on the ring. All of the syringe fused to the ring.

Embedding and Co-Firing

Most cubic zirconia and lab created gemstones can be fired in place in BRONZclay. In fact, most stones are relieved of their time and temperature limitations when fired in activated carbon. This is very interesting and fortunate because now we can use those gorgeous tanzanite cubic zirconia stones that we all love, but burn in silver clay at very low temperatures. More on gemstones can be found in my BRONZclay firing article.

- Glass cannot be co-fired with BRONZclay. The firings are too long and too hot.
- Sterling silver and fine silver cannot be co-fired with the BRONZclay. The metals will attempt to alloy (mix) with each other in an unattractive way.
- Precious metal clay cannot be co-fired with BRONZclay. These two clays can be combined, but not during the sintering phase of BRONZclay.
- Copper, Brass and Bronze can be embedded in BRONZclay and co-fired.

Findings

Sterling and fine silver findings cannot be fired in place in BRONZclay. As the bronze sinters, the silver will try to alloy with it. The result is rather ugly. Brass, bronze and copper can be fired in place with bronze clay. Brass finding can be fired in place with BRONZclay.

I do not recommend using brass, bronze or copper for ear wires because the high-copper content in these metals can cause piercings to become sore and infected. Use sterling silver, fine silver or karat gold wires for earrings and posts.

Carbon Crumbs

Carbon crumbs can get in between a gemstone and the edge of the setting. A small piece of fiber paper can be laid on top of the stone to protect it from carbon dust. Use a small piece to avoid creating air pockets in the carbon.

Sanding & Refining

BRONZclay is very easy to sand, file, shape and carve when dry, and much more difficult in the fired stage. Do all the work you possibly can before the clay is fired. Smooth out with sandpaper. The clay can even be "pre-polished" and burnished.

Carving

BRONZclay is wonderful to carve. Use miniature carving tools, wax carving tools, ball burnishers, needle tools, etc. I like using diamond tips of various shapes to "rub" away areas. They can be used to carve by rubbing. Use them in a hand-chuck rather than a rotary tool. BRONZclay is so soft that no power is needed to "power carve" it. Save the chips from carving to rehydrate or use as embellishments.

Soldering

Bronze clay is easy to solder, however, pickling will dissolve the tin from the surface, making it look like copper. Be prepared for a copper colored surface if you pickle. In this way you can end up with both copper and bronze clay from one material.

Polishing and Patina

BRONZclay can be worn right out of the kiln with no polishing or finishing at all and people love the look. The beautiful peacock colors that come from the coal-based carbon are stunning and surprisingly durable, but remember that BRONZclay is a true bronze when fired. It can be polished and patinated just like any other bronze. It can be oxidized by heat or by chemical. It can be colored with a wide variety of patinas and polished to look like gold, adding almost limitless possibilities for creating. BRONZclay can also be made to look like copper just by pickling. The mild acid of a pickling solution dissolves the tin from the surface of the metal; similar to when silver is pickled, leaving an enriched copper surface.

Copper and the Green Finger

Copper is famous for its beautiful green patina, but most of us prefer that patina on architecture, not our fingers. Since BRONZclay is 85% copper, most peoples' skin will react with it to create a green ring around the finger (or wrist if it's a cuff bracelet). Where there is sweat, there will be green. There are a couple of approaches to this problem. You can avoid making rings, accept the patina on your skin, wear bronze rings and cuffs only long enough that they don't cause a reaction, or use a sterling silver, silver or gold insert to keep skin from contacting the bronze. Snakeskin, leather or Ultrasuede could be used as a liner for cuff bracelets.

Black Scum

If your clay starts to show moldy looking green/black patches or spots, this is oxidation. Scrape any black patches off. Do not mix any of the oxidized clay into the ball. The oxidized clay inhibits the copper and tin particles from sintering.

Use Lavender water and keep your clay tightly wrapped to avoid oxidation..

More to come!

We'll be updating and adding to this information, so be sure to check back to find out what's new with BRONZclay at Cool Tools. If you have any questions about working with BRONZclay, I'd love to hear from you! [Write to me](#) with your BRONZclay questions, I'll be happy to help.