

TIPS FOR WORKING WITH BRONZclay™



BRONZclay™, like any clay, is highly workable; but, because it is a metal clay, it has its own characteristics as well. Here are some tips for working with BRONZclay:

- When you're not using BRONZclay™, keep it tightly wrapped in plastic and sealed in a plastic bag for extra protection against drying. Store all BRONZclay in a refrigerator until you're ready to use it. Refrigerate the clay between sessions, too.
- Rub a dab of olive oil on your hands and tools before you begin working with the clay.
- BRONZclay™ tends to dry quickly. You'll notice the clay stiffening and cracking when it begins to dry. While working the clay, refresh it periodically with a small amount of water using a spray bottle or brush.
- Keep pieces wrapped in plastic and placed to the side when they are not actively being worked.
- Avoid using tools that absorb water.
- After prolonged exposure to air, BRONZclay™ develops a black surface. Scrape away this black layer until you reach the useable clay, which will be unaffected and ready to use.

FORMING BRONZclay™

Using simple tools and your own talented fingers, roll, press, form and sculpt BRONZclay™ into any desired shape. Clay elements can be added, removed and refined as you go, making this a spontaneous and highly creative process. Keep the Tips for Working with BRONZclay™ in mind as you form your piece.

SUGGESTED HAND TOOLS

One of the best things about BRONZclay™ You can find tools to work the clay just about anywhere—around the house, in the studio or shop, the kitchen, the office, the toy box and the great outdoors. In fact, you'll find yourself always on the look-out for everyday objects that can become the next great tool for enhancing your designs

BASIC TOOLS

Sheets of plastic or glass make terrific and portable work surfaces. Use commercially available work surfaces, Mylar sheets, page dividers or plastic signs. Most artists start with the tools below; many you may already have, others are available at metalclay.com.au

- water dish with sponge
- paintbrush
- acrylic or other roller
- drinking straws
- clay shaper
- spacers
- needle tool
- craft knife
- ruler
- toothpicks
- nail brush



SPECIALTY TOOLS

As your interest grows, you'll find yourself adding tools to your collection. In addition to your own discoveries, you might find these useful; many are available at www.metalclay.com.au

- magnifiers
- stainless steel brush
- rubber stamps
- texture plates
- design templates
- patina solution
- small chisels
- files
- tweezers
- tissue blade
- emery boards
- potter's wheel

Keep Your Tools in good Shape!

If you're also a Silver Metal Clay artist, never use non-washable tools (files, abrasive sanding papers, etc.) on both Silver Metal Clay and BRONZclay™ projects.

Unless you are disciplined and wash all of your tools between uses, we suggest keeping a separate set of tools reserved exclusively for BRONZclay.

BASIC FORMING TECHNIQUES

Rub a few drops of olive oil on your palms and tools before starting to keep them from sticking to the clay and to keep the clay moist.

To make sheets, use a roller and stir sticks or spacers on each side of the lump to make a uniform thickness (thicknesses of 3-6 cards are typical for jewellery items).

A knife, Tissue Blade or playing card edge can be used to lift the pieces off the sheet.

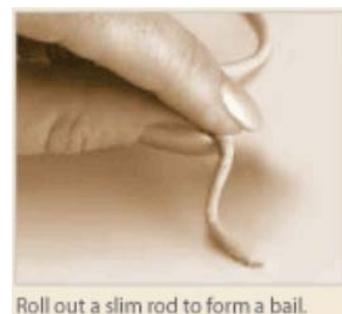
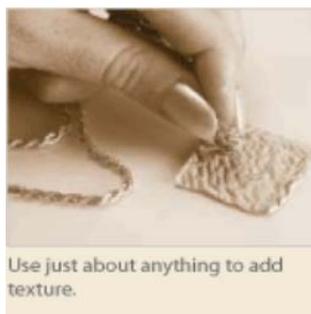
To join parts, set them close together and apply a drop of water and slip with a pointed brush. Let the water penetrate for a few seconds, then firmly press the parts together and hold them in place for several seconds. Using ceramic techniques of scoring edges to be joined and applying slip, is also successful with BRONZclay™.

To achieve textures, press the BRONZclay™ against a rough surface or roll the surface over a sheet of BRONZclay. Even simple objects such as bottle caps create interesting trails, and leaves, bark and wood offer many possibilities.

One way to make a pendant bail is to roll out a slender rod and form it into a loop. Cut off the ends to make a solid attachment, moisten with water and press it into position after using the joining techniques already suggested.

To make rings, wrap enough wide tape around a dowel to create a form of the correct size (remember to allow roughly 20% for shrinkage). Cover the form with plastic wrap and create your ring. When it is finished (and preferably before the clay dries), slide the ring off.

Note: If the BRONZclay™ becomes dry as you work, spray or brush on a little water (not too much) and cover it with plastic wrap for a few minutes to allow it to rehydrate. If you add too much water, just set the clay aside, loosely wrapped, and allow it to dry out.



MAKING AND USING SLIP

Making Slip

Slip will quickly become one of your favourite tools for working with BRONZclay™, and it's easy to make. Simply mix tiny pieces of clay (filings, small fresh or dried pieces, etc.) with water (we recommend distilled water to minimize oxidation) until you reach a toothpaste consistency. Keep your slip stored in a sealed container; stir before using. Note: Although slip can last for about one week, we suggest only making enough slip for your immediate need.

Making Repairs

Because of its strength, BRONZclay™ slip is suitable for attaching parts, repairing breaks and reinforcing delicate areas such as the point where a loop attaches to a pendant.

Another method is to use the clay. Gently press it into cracks or joins using a "caulking" or filling action. Use fingers or clay shapers for added pressure and smoothing.

Transitioning

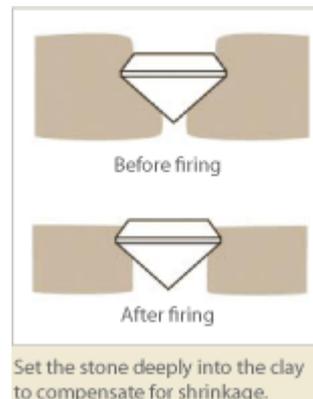
Use slip or clay to fill between elements when creating an organic effect.

ADDING STONES TO BRONZclay™

Add Metal Clay safe CZs and lab-created stones to BRONZclay™ to add design versatility. Because these particular gems are composed of laboratory-grown corundum, spinel or CZ, and are created at very high temperatures, they will not be damaged during firing. We do not recommend firing precious natural stones, most glass objects or any organic material such as pearl, opal, bone, shell and wood. Important: Never fire a doublet.

To Set a Small Faceted Stone

Prepare a seat or rim that will provide enough metal to surround the stone. This can be added to a completed form or built into the original design. Make a conical hole with a pencil point or similar tool. Use a straw or similar tool to remove clay from beneath the stone. Set the stone in place and press it down until the table is below the surface of the work. Remember that the clay around and under the stone will contract, squeezing the stone upward. Fire as usual; cool in the oven to prevent thermal shock.



MAKING MOULDS AND MORE

BRONZclay™ lends itself easily to working with moulds you make yourself or with commercially made moulds. Moulds allow for repeated elements and the production of multiples. Hollow forms allow your work to be light. Here are some ideas for moulds:

Soap

A simple way to get started is to carve a pattern into a bar of soap. Press BRONZclay™ into the depression, peel it away, and you have a moulded form. If you don't like the result, re-work the carving and try again.

Moulds

Metalclay.com.au sells a variety of moulds intended for clay. All will work for BRONZclay™.

To make your own moulds, buy our two-part silicone mould compound. Most moulds do not need lubrication, but if the clay sticks, spray the mould lightly with olive oil cooking spray.



Using 2 Part Silicon Mould to make a mould

DRYING BRONZclay™ Please now refer to the New BRONZclay Drying and Firing Schedule Information Sheet. You will need to dry your BRONZclay™ piece thoroughly before firing to prevent moisture in the clay from expanding and creating defects during firing. To dry the piece, air dry naturally or gently place it on a warming surface such as a coffee mug warmer or a dehydrator. When dry, the clay will be leather-hard, making it flexible and easy to make the most of finishing touches such as filing, drilling, sanding and carving. After firing, this work is more time-consuming and challenging, so take advantage of this pre-fired stage to do as much of your detailed finishing work as possible.

FIRING BRONZclay™ Please now refer to the New BRONZclay Drying and Firing Schedule Info Sheet
Firing BRONZclay™ is a two-step process that uses low heat to prepare the kiln's atmosphere, then high heat to sinter the alloy. BRONZclay must be fired in a kiln. During firing, the non-toxic binder vaporizes, leaving a solid, pure bronze object. Note: Make sure your piece is completely dry before firing; it's not a problem for the piece to dry for weeks before firing, but firing a piece while it's still damp can cause the moisture to expand, creating blisters.

To reduce oxidation, the BRONZclay™ piece(s) must be surrounded by activated carbon during firing. The activated carbon we supply in Australia produces a colourful, more intense range of patinas.

To Fire BRONZclay™:

Spread 30mm of activated carbon granules on the bottom of a stainless steel firing pan. Place the piece on top of the layer; if firing two or more pieces, leave at least 15mm between pieces; leave more if the pieces are larger. Note: Most kilns are cooler in the front near the door, so the front of your firing pan will be cooler than the back and sides. Compensate for this by placing pieces closer to the sides and back of the firing container. If you're using a top-loading kiln, there's no need to adjust. Pour more activated carbon granules on top of the piece until the container is full, making sure there is at least a 15mm layer of granules on top of the piece. If you are firing several pieces in layers, make sure there is at least 15mm of space between the vertical layers as well. Cover the firing pan with its lid and place it in the kiln on stilts to allow good heat circulation.



BRONZclay™ FIRING SCHEDULE

For pieces 3mm (6 cards) thick or less:

Ramp at 260°C/hour to 840°C and hold for 2 hours (total firing time, including ramp-time, will be between 4 and 5 hours).

For pieces thicker than 3mm (6 + cards)

Ramp at 120°C/hour to 840°C and hold for 3 hours (total firing time, including ramp-time, will be about 10 hours).

Note: The firing schedules for thicker pieces will work fine for thin pieces should you have both thicknesses in your firing pan.

Warning! ⚠️

The firing pan will be extremely hot; do not touch! Allow the pan to cool completely before removing the lid. We recommend wearing heat-resistant gloves such as welding gloves while removing the firing pan.

The firing pan should be allowed to cool completely before removing it from the kiln; however, if you need to use your kiln again right away, you can move the pan to a heat-resistant surface (e.g.: a soldering pad or ceramic tile) and allow it to cool there.

Once the firing pan and carbon have cooled, remove the BRONZclay™ pieces from the carbon bed and place them on a heat-resistant surface to finish cooling. You can re-use the activated carbon until you notice it starting to break down (broken grains and a sooty appearance). Note: If there are no stones embedded in the piece, it can be quenched in water.

FINISHING BRONZclay™

Once fired, the BRONZclay™ piece is solid metal and, like any other metal, it can be sawn, drilled, sanded, patinaed or soldered using traditional jewellery tools and materials.

Hand-Burnishing

Perhaps the most basic (and rewarding) way to polish BRONZclay™ is to rub it with any hard, smooth object. Commercial burnishers offer a time-tested tool shape held in a comfortable handle. Rub the piece in all directions to bring out a shine. Follow this with a polishing cloth to smooth away burnishing marks.



Curved Burnisher

Finishing Papers

The mesh structure of finishing papers resists loading which increases their effectiveness and helps extend service life.

Scratch-Brushing

Brushes made from very thin stainless steel wires can be used to burnish BRONZclay™. Lubricate the brush with any sort of soap and work under a slow drizzle of water. Scrub in all directions. Scratch-brushing can be used in conjunction with any other technique.



Pen style steel scratch brush – refill available

Mass Finishing

A rotary tumbler is a mechanical device in which hundreds of steel balls and rods cascade against jewellery objects as they rotate in a drum like a miniature clothes dryer. Using this method, many pieces can be finished at once with minimal individual handling. A magnetic finisher or vibratory tumbler with steel rods is also a very effective choice

STORAGE AND SHELF LIFE

BRONZclay™ is sealed in an air-tight foil pouch to preserve its freshness. Use this package or a good-quality plastic wrap (or both) to keep your clay moist. It is good practice to take out only what you will use within a few minutes and to add a few drops of water to the lump at the end of each work session. Adding three drops of lavender oil to a water filled spritzer bottle and lightly spraying the lump before storage, helps retain moisture. Keep BRONZclay refrigerated when not in use.

BRONZclay™ can be rehydrated if it dries out, though it can be difficult to achieve the homogenous consistency of fresh BRONZclay. To restore dry material, pierce the lump with several holes or dice it into small pieces. Add water and knead, then seal the clay and water in an airtight container. Set the container aside to allow the water to penetrate; allow at least one full day, more if the clay was very dry. With the clay still wrapped in plastic, knead repeatedly to force the water into the dense metal structure. If you find you have added too much water, spread the BRONZclay on a piece of plastic, glass or waxed paper and allow it to dry to a useable consistency.

BRONZclay™ HEALTH AND SAFETY

Issues of safety do not arise from BRONZclay™ itself, but rather in the firing/sintering process due to the use of high-temperature kilns. Kilns should be positioned on a sturdy, stable surface, away from combustible materials, with a foot of open space on all sides. Take special precautions if the kiln is in an area where animals or young children may come in contact with it.

The binder in BRONZclay™ is non-toxic, and no toxic fumes will be present during firing. Though rare, it is possible for some individuals to experience some sensitivity to BRONZclay. We recommend wearing a dust mask while working with the activated carbon. Use a nail brush to clean hands and nails after working with the clay.

As always, when working around high heat, wear appropriate clothing and avoid loose or dangling clothes and clothes made with synthetic fabrics. There is little reason to look into a hot kiln for any length of time, but if you do, wear appropriate eye protection;