

BRONZclay™



FASTfire
BRONZclay™

brought to you by



Contact us for all your metal clay
needs: silver, gold,
copper, and **bronze!**

Toll-free (in U.S.) 866-381-0100
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“The Gate” bracelet by Wanaree Tanner



The Basics of

BRONZclay™

FASTfire
BRONZclay™



Tips, techniques, and tools
for working with
BRONZclay™ & FASTfire
BRONZclay™.



BRONZclay™ octopus sculpture
by Gordon Ueyehara

Brought to you by



BRONZclay™ Inca Sun by Stan Micallef

Welcome to BRONZclay™!

BRONZclay™ & FASTfire BRONZclay™ are malleable substances made from metal particles, organic binder, and moisture, and can be used to create any embellishment or adornment you desire. Sculpt, texture, or mold them into exactly what you wish it to become, and enjoy the limitless possibilities of this unique medium.

Bronze Beginnings

Bronze is one of the first-developed and longest-used metal alloys in human history. The main ingredient for bronze is copper, and through time the remainder of the alloy is filled with tin, aluminum, phosphorus, silicon, or manganese. The first bronze was actually made from combining copper and arsenic, but today the majority of bronze is made with copper and tin.

As cultures and countries developed, copper, tin, and the resulting bronze were often used as trade items, so much so that new villages were often settled along copper and tin mining sites. Conveniently, tin and copper deposits are nearly always located close to each other.

Over the centuries, bronze has been used in nearly all aspects of human industrial development and function. Bronze has been used for weaponry, armor, cooking pots and utensils, adornments, sculpture, structure and dwelling reinforcement, handheld tools such as hammers or mallets, ammunition such as cannonballs, musical instruments, and even coin currency.

The first examples of people working with bronze come from Egypt, China, and Greece around 4500 B.C.E. From the 14th century B.C.E., evidence of extremely skilled and detailed bronzework has been found. Early Chinese art from 14-15th centuries B.C.E. are credited to be the first examples of lost-wax casting. Around the same time, the Romans and Etruscans were working with bronze for adornment items, tools, and handheld weapons. Once used for basic items such as cookware, bronze took on a new role in the world of religious items. In Nigeria, the Benin culture was hailed for exquisite religious ritual items, while in the Philippines bronze cannons shattered the silence and introduced the world to bronze heavy artillery. From these early beginnings developed bronze sculpture and patinas, leading us hundreds of years later to the 1430's casting of artwork by Donatello. By the 1700's, artists were painting gilt onto bronze pieces to further increase their value and detail.

Today, bronze is still used for countless items, from weatherstripping to conduit. Now, with the invent of a bronze clay, our only limit is our imagination (and maybe the size of your firing pan!)



BRONZclay™ knife by Emma Baird

Helpful Hints and Troubleshooting

- **Hydrate the clay.** It's not unusual for the clay to come out of the package drier than desired. Place clay in doubled layers of cling wrap and massage plain water into the clay until it's the consistency you'd prefer.
- Before firing any pieces you're in love with, **make test pieces.** Each piece should be 1.5" x .5" and 2mm thick. Fire using the schedule for the type of clay you're working with. After firing, test by trying to bend to a 90-degree angle.
 - If the piece bends with no signs of cracking, it's fully and properly sintered.
 - If the piece breaks easily, it is under-fired. Try again, raising the kiln temperature by 25 degrees.
 - If the piece folds 90 degrees but breaks before a 180-degree "U", and it looks like the outside of the clay is metal but the inside is raw, keep the same temperature but extend your firing time by 30 minutes.
 - If the piece comes out as hard metal but looks bubbled or cratered, it's been over-heated. Reduce the firing temperature by 25 degrees.

*Use the above criteria to fire test pieces until you find exactly how your kiln and BRONZclays work best together.
- When not in use, **keep the clay tightly wrapped** in plastic and place the wrapped piece in a sealed plastic bag for added protection. Some teachers recommend storing unopened packages (as well as opened packages) of BRONZclay™ in a refrigerator when not in use.
- If you notice a black tinge to your clay, it's just some surface oxidation. Scrape it off until the clay seems moist and clear again, then keep working. Be sure to keep the clay air-tight between future uses.
- Always use an appropriate conditioning agent on your hands and tools to keep clay from sticking, especially with textures and molds.
- While working the clay, refresh it periodically with a small amount of water using a spray bottle or brush.
- Sculpt pieces of clay together well with moist clay, almost like spackle; thin slip does not work as well.
- Avoid using tools that absorb water (i.e. wood or other porous materials).
- If a piece comes out of the kiln warped, flatten it by placing the piece on a rubber block or similar surface and gently tapping with a rawhide mallet.
- If a piece comes out of the kiln with a crack, or if you want to add more embellishments to a fired piece, you can fix/add clay by using a clay spackle made with your same formula clay and PasteMaker.

Safety and Precautions

The binder in BRONZclay™ & FASTfire BRONZclay™ is non-toxic, and no toxic fumes will be present during firing. Though rare, it is possible for some individuals to experience some skin sensitivity to BRONZclay™. We recommend wearing a dust mask while working on greenware and with the activated carbon. Please see the MSDS for BRONZclay™ & FASTfire BRONZclay™ for more specific information (available at www.artclayworld.com and upon request from Art Clay World, USA.)

Firing FASTfire BRONZclay™

To Fire FASTfire BRONZclay™ in your electric, digitally programmable kiln:

i. Place pieces, leaving at least 1/2 inch between pieces and the sides of any firing vessel, on a 1 inch deep layer of activated coconut carbon. Larger pieces do better with more space between them.

ii. If firing many pieces, you are able to layer them into no more than 2 layers.

Make sure there is at least 1 inch of carbon between top and bottom layers. **NOTE:**

Front-loading kilns are cooler in the front near the door, so the front of your firing container will be cooler than the other sides. Compensate for this by placing the pieces closer to the sides and back of the firing container, making sure you leave at least 1" of space between the pieces and the front of the firing pan. If you have a top-loading kiln there's no need to adjust.

iii. Add more activated carbon to the pan until it is full. If your pan has a lid, place it on for firing. If the lid has become warped or you don't have one, it is fine to fire without.

iv. Place the pan centered in the kiln on kiln posts. If you are using a smaller kiln and don't have enough space for true kiln posts, at least get the pan off the kiln floor with trimmed fiber board. It is essential that the firing pan is not flat on the kiln floor; heat would not circulate properly around the pan.

v. For all sizes of items, ramp full speed to 1525°F and hold for 1 hour.

If your piece comes out with unexpected results, see the Troubleshooting info on the next page.

Finishing BRONZclay™

Once fired, the piece is a solid piece of metal. As with other fired metals, it can be sawn, drilled, sanded, patinated, or soldered using traditional jewelry tools and materials. Keep in mind that many finishing techniques will be easier to perform at the dried, pre-fired stage.

Straight from the kiln, BRONZclay™ can be a wide range of colors, from greens to vibrant reds to more traditional brassy colors. You may choose to leave the colorful metal alone, or you can use tools to make the piece shinier and more traditionally colored. To bring out a true bronze color and finish, use a stainless steel brush or metal burnisher. For a very shiny finish, tumble the piece for at least two hours with stainless steel shot.



FASTfire BRONZclay™
Seahorse
by Katie Baum



BRONZclay™ leaf
created by Sherry Viktora

Suggested Tools for Working with BRONZclay™

Like other clays, BRONZclay™ & FASTfire BRONZclay™ can be formed, molded, sculpted, and shaped using your own hands, and just about anything else you can find lying around.

Standard Tools

Necessary for any project, these are the basic items:

- Portable, hard working surface
- Thin non-stick surface
- Rolling tool
- Spacers (slats or playing cards)
- Small paintbrushes
- Cocktail straws
- Measuring tool (ruler, tape)
- Craft knife
- Small file set
- toothpicks
- Burnishing tools
- Tweezers
- Rubber block



Graduated slat set for controlling clay thickness (ACW product # F-125)



Agate burnisher for shining surfaces.
(ACW product # R-036)



Exclusive flexiMold™ silicone molds,
(ACW product # beginning with FLX)



Making it easy: The BRONZclay™ Combo Kit from Art Clay World, USA (BZC-01)
Included: 100g BRONZclay™, firing pan, and 2lbs carbon.

Specialty Tools

These tools may be beyond the basics, but they are still easy to find and great to have available:

- Specialty-tipped shaping tools
- Clay sculpting tools
- Rubber stamps
- Silicone texture sheets
- Tissue blade or ceramic scraper
- Magnification lenses
- Specialty shape cutters (like fondant or small cookie cutters)
- Patinas
- Specifically-shaped brushes
- Gemstone-setting tools/burs
- Mandrels (ring, bracelet)
- Hand drill/pin vise
- Engraving tools
- Extruders
- Embossers
- Tumbler

Layers and Attachments



BRONZclay™ Wood Spirit pendant created by Barbara Diane Hance

Unlike silver or gold clay, BRONZclay™ does not yet have a slip, paste, or syringe-type formula. You can create your own slip or paste by adding water to BRONZclay™, however, this does not always lend itself for a strong attachment.

The best way to attach layers is to sculpt them together, adding each layer while the one below it is still moist enough to sculpt into. There are rubber-tipped sculpting tools on the market that are wonderful for this type of clay work.



BRONZclay™ pendant created by Donna Lewis

To create layers, dangles, bangles, and dimensional effects, consider little bronze or wire rivets to hold things in place. Get creative with bails, wire, and jump rings to make interesting and unique attachments. While slip may not be the most reliable route for strong attachment, there are plenty of other options for fantastic findings.

Embellishing BRONZclay™

Because of the firing requirements for BRONZclay™, it is not a good fit for firing natural gemstones in place. Some Cubic Zirconia may work well; speak with your supplier of CZs for their general firing capabilities. However, if you desire to set natural gemstones, you will need to get creative with pre-formed settings or wire.

BRONZclay™ is a great candidate for any embellishment added after firing, including resins, beadwork, and glass.



BRONZclay™ and turquoise pendant created by Julie Campbell



BRONZclay™ and pearl bracelet created by Emma Baird



BRONZclay™ tribal pendant created by Stanley Micallef

Drying BRONZclay™

Once you've finished your piece, you will need to dry the clay before firing it. Like any other metal clay, the moisture needs to be completely removed to avoid generating steam within the piece, which would push outward and cause pocking and damage to the piece during firing.

Gently place the piece on a warming surface such as a coffee mug warmer (ACW #F-247) or the top of a kiln (be careful to keep pieces away from the kiln's vents). A food dehydrator (ACS #DH-05) works well, too. Once BRONZclay™ is fired, it's much more difficult to finish, so the more pre-finishing work you can do, the better. The dried "green" stage is the best time for smoothing, filing, sanding, drilling, carving, and engraving.

BRONZclay™ shrinks a total of about 20% from package to finished product—keep this in mind as you create your pieces.



A candle or mug warmer makes the perfect drying tool. (ACW #F-247)

Firing BRONZclay™

To reduce oxidation, BRONZclay™ pieces must be surrounded by activated carbon during firing. Firing BRONZclay™ is a multi-step process that uses low heat to vaporize the binder, then high heat to sinter the metal.

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v. For pieces 3mm/12 cards thick or less, ramp 500°F/hour to 1550°F and hold for 2 hours. For pieces thicker than 3mm/12 cards and up to 10mm thick, ramp at 250°F/hour to 1550°F and hold for 3 hours.



BRONZclay™ must be fired submerged in activated coconut carbon inside a firing pan.