

Metal Adventures Presents

**COPPR**clay™

## TIPS FOR WORKING WITH COPPRclay™

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

- When you're not using the clay, keep it in a water-tight plastic container along with a wet sponge or wet paper towel (a take-out soup container works great!). Make sure the clay is not touching the sponge or paper towel.
- Rub a dab of olive oil on your hands and tools before you begin working with the clay.
- COPPRclay™ 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. You can also knead a small amount of olive oil into the clay to minimize stickiness and to improve pliability.
- Keep pieces wrapped in plastic and placed to the side when they are not actively being worked.
- Avoid using tools that absorb water.

## FORMING COPPRclay™

Using simple tools and your own talented fingers, roll, press, form and sculpt COPPRclay™ 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 COPPRclay™ in mind.

## SUGGESTED HAND TOOLS

One of the best things about COPPRclay is that you can find tools to work this clay just about anywhere—around the house, in the studio, 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 mylar sheets, page dividers or plastic signs. Most artists start with the tools below; many are available at [riogrande.com](http://riogrande.com).

- water dish with sponge
- paintbrush
- plastic rolling tube
- drinking straws
- rubber-tipped shaping tool
- playing cards (*spacers*)
- needle
- 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 [riogrande.com](http://riogrande.com)):

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

## KEEP YOUR TOOLS IN SHAPE!

If you're also a silver clay artist, never use non-washable tools (files, abrasive papers, etc.) on both silver clay and COPPRclay™/BRONZclay™ projects. Keep a separate set of these tools reserved exclusively for BRONZclay™ and COPPRclay™.

## 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 two equal stacks of playing cards on each side of the lump to make a uniform thickness (thicknesses of 3-6 cards are typical for jewelry items).
- A knife, [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.
- To achieve textures, press the clay against a rough surface or roll the surface over a sheet of clay. 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.
- 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.

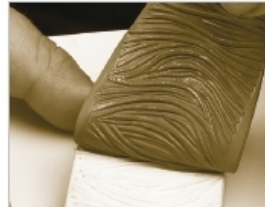
**Note:** If the clay becomes dry as you work, spray or brush on a little water (not too much!) and cover it with plastic wrap for a few minutes to allow it to rehydrate. If you add too much water, just set the clay aside, loosely wrapped, and allow it to dry out. You can also knead a small amount of olive oil into the clay to prevent stickiness and to keep it pliable.



Use stirring sticks as a thickness gauge.



Use a sharp edge to cut the clay.



Use just about anything to add texture.



Roll out a slim rod to form a bail.

## MAKING AND USING SLIP

### Making Slip

Slip will quickly become one of your favorite tools for working with COPPRclayT, 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) until you reach a toothpaste consistency. Keep your slip stored in a sealed container; stir before using.

### Making Repairs

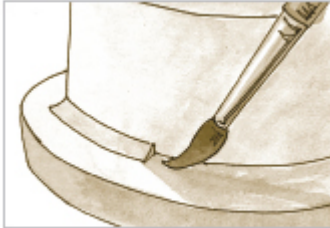
Because of its strength, COPPRclayT slip is suitable for attaching parts, repairing breaks and reinforcing delicate areas such as the point where a loop attaches to a pendant.

### Transitioning

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



Use slip to fill small cracks that can appear as the piece dries.



Use slip to fill between elements.

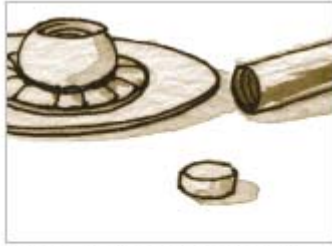
## ADDING STONES

Add CZs or certain lab-created stones to COPPRclayT 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.

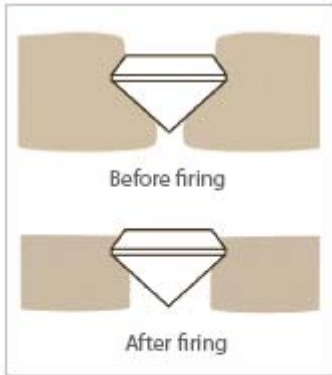
### To Set a Small Faceted Stone

1. 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.
2. Make a conical hole with a pencil point or similar tool.
3. Use a straw or similar tool to remove clay from beneath the stone.
4. 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.
5. Fire as usual; cool in the oven to prevent thermal shock.

**Important:** Pieces embedded in activated carbon will remain hot for several hours; do not remove them until you can comfortably hold your hand just above the firing pan.



Create a seat to hold a faceted stone.



Set the stone deeply into the clay to compensate for shrinkage.

## MAKING MOLDS AND MORE

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

### Soap

A simple way to get started is to carve a pattern into a bar of soap. Press the clay into the depression, peel it away, and you have a molded form. If you don't like the result, re-work the carving and try again. Need a dozen? It's a simple matter of repetition.

### Rubber Molds

Hobby shops sell a variety of molds intended for candy, candles and plaster. Specialty kitchen shops may be a good source for interesting cookie, butter or gelatin molds. All will work for COPPRclayT. To make your own molds, buy a two-part silicone mold compound (such as [Rio Cold-MoldT](#), shown below). Most molds do not need lubrication, but if the clay sticks, spray the mold lightly with an aerosol cooking oil.



Combine equal parts of Cold-Mold™ silicone compound into a flexible putty that you can use to create your mold.



Rio Cold-Mold™ compound, 1 lb.  
#701-046

## DRYING COPPRclay™

You will need to dry your COPPRclay™ piece thoroughly before firing to prevent moisture in the clay from expanding and creating defects during firing. To dry the piece, gently place it on a warming surface such as a coffee mug warmer or a vegetable dehydrator. When dry, the clay will be leather-hard, making it flexible and amenable to finishing touches such as filing, drilling, sanding and carving. After firing, this work is more time-consuming, so take advantage of this pre-fired stage to do as much of your detailed finishing work as possible.

## FIRING COPPRclay™

Firing COPPRclay™ is a process that uses low heat to prepare the kiln's atmosphere and vaporize the binder and high heat to sinter the alloy. COPPRclay™ must be fired in a kiln. During firing, the non-toxic binder vaporizes, leaving a solid, pure copper 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 clay piece(s) must be surrounded by coconut shell-based activated carbon (#703-205) during firing. The activated carbon tends to produce a natural terra cotta color. Important: COPPRclay™ can only be fired in the coconut shell-based carbon; do not fire it in the coal-based carbon (which can be used when firing BRONZclay™) as the piece will not sinter properly and may break easily.

## To Fire COPPRclay™:

- 1) Spread 1" of activated carbon granules on the bottom of a stainless steel firing pan (#703-202, #703-206). Remember, COPPRclay™ can only be fired in the coconut shell-based carbon.
- 2) Place the piece on top of the layer; if firing two or more pieces, leave at least 1/2" between pieces; leave more if the pieces are larger.  
**Note:** Most front-loading kilns are cooler in the front near the door, so the front of your firing pan will be cooler than the back and sides. To compensate for this, place 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. Avoid the front of the pan when using a front-loading kiln.
- 3) Pour more activated carbon granules on top of the piece until the container is full, making sure there is at least a 1" layer of granules on top of the piece. If you are firing several pieces in layers, make sure there is at least 1" of space between the vertical layers as well.
- 4) Cover the firing pan with its lid and place it in the kiln on 1" stilts to allow good heat circulation. Fire clay according to the firing schedule shown below:

## COPPRclay™ Firing Schedule:

Regardless of thickness and whether or not you plan to enamel the piece:  
Ramp at full speed to 1700° (927°C) and hold for 3 hours (total firing time, including ramp-time, will be about 4 hours).

**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 Rio 12" welding gloves (#350-051 and #350-050) while removing the firing pan.

- 5) 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.

- 6) Once the firing pan and carbon have cooled (you can hold your hand just above the firing pan comfortably), remove the fired 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 at this time.

### **FINISHING COPPRclay™**

Once fired, the COPPRclayT piece is solid metal and, like any other metal, it can be sawn, drilled, sanded, patinaed or soldered using traditional jewelry tools and materials. Fired COPPRclayT can also be enamelled.

### **Hand-Burnishing**

Perhaps the most basic (and rewarding) way to polish COPPRclayT is to rub it with any hard, smooth object. Commercial burnishers offer a time-tested tool shape held in a comfortable handle, but you can use knitting needles, teaspoons or polished wood nails. Rub the piece in all directions to bring out a shine. Follow this with a polishing cloth to smooth away burnishing marks.

### **SpectrumT Finishing Papers**

The screen mesh structure of SpectrumT finishing papers resists loading to increase their effectiveness and help extend service life. Each sheet is reversible, doubling its useable surface area. The synthetic fiber backing of carefully graded white aluminum oxide abrasive can be used wet or dry and is especially effective on COPPRclayT. Sheets measure 8-1/4" x 11".

### **Scratch-Brushing**

Brushes made from very thin stainless steel wires can be used to burnish COPPRclayT. 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.

### **Mass Finishing**

A rotary tumbler is a mechanical device in which hundreds of steel balls and rods cascade against jewelry 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 with steel pins is also a very effective choice.

### **STORAGE AND SHELF LIFE**

COPPRclayT is sealed in an air-tight foil package to preserve its freshness. Keep the clay inside the package, and keep the package in a water-tight plastic container (a take-out soup container works great!). Add a wet sponge or wet paper towel to the container, making sure the clay doesn't touch the sponge or the paper towel. Use the original package or a good-quality plastic wrap 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. COPPRclayT can be rehydrated if it dries out, though it can be difficult to achieve the homogenous consistency of fresh COPPRclayT. 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 a water-tight container in a hydrated atmosphere such as a humidifier. 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 clay on a piece of plastic, glass or waxed paper and allow it to dry to a useable consistency.