



COOL TOOLS

## COPPRclay™ Overview & Firing Guide



COPPRclay created by Metal Adventures is easily sculpted, molded, carved and formed, and becomes solid copper when fired. Your imagination and just a few simple tools will allow you to create solid copper pieces, from jewelry to sculptures! And because COPPRclay is pure copper, it's great for those artists who enjoy applying enamels (firing requirements noted below).

COPPRclay is just that: a clay. Like clay, it's highly workable but it also dries quickly. You'll notice the clay stiffening and cracking when it begins to dry.

### Some tips to keep in mind:

- Keep COPPRclay refrigerated until you're ready to use it and in between sessions.
- Rub a dab of SLIK on your hands before you begin working with the clay.
- While working the clay, refresh it periodically with a small amount of water using a spray bottle or brush.
- Avoid using tools that absorb water.
- When storing or while in use, keep clay wrapped in a piece of loosely sealed plastic wrap and store in a clay hydrator for added longevity. Refrigerate when not in use.

### Making Slip

Slip will quickly become one of your favorite tools for working with COPPRclay, and it's easy to make. Simply mix tiny pieces of clay (filings, small dried or wet pieces, etc.) with water (we recommend distilled water for a longer shelf-life) until you reach a paste consistency. Keep your slip stored in a sealed container.

**Note:** Slip will last for about one week, so make only enough for your immediate need.

### Drying the Clay

Once you've finished your piece, you will need to dry the clay before firing it. Gently place the piece on a warming surface such as a metal clay hot plate or in a dehydrator. Once dry, you'll notice the clay is leather hard, making it very easy to add finishing touches such as filing, drilling, sanding and carving. Once COPPRclay is fired, it's much more difficult to finish, so take advantage of this pre-fired stage to do as much of your detailed finishing work as possible.

### Firing

To reduce oxidation, the piece(s) must be embedded in coconut shell-based, or Magic Carbon activated carbon during firing. **Important:** Some coal-based carbons may not fire COPPRclay properly; we recommend using coconut shell-based activated carbon or Magic Carbon. Firing COPPRclay is a two-step process that uses low heat to vaporize the binder, then high heat to sinter the alloy.

1. Spread 1" of coconut shell-based activated carbon granules on the bottom of a stainless steel firing container.
2. Place the piece on top of the layer; if firing two or more pieces, leave at least 1/2" between pieces, more if the pieces are large.
3. Pour more activated carbon granules on top of the pieces until the container is filled 1" from the top, making sure there is a 1/2" layer of granules on top of the pieces. Again, if you are firing many pieces in layers, make sure there is at least 1/2" of space between the vertical layers as well. Note: Do not fire more than 100 grams of clay at once; overloading may cause poor sintering.
4. Put the stainless steel lid on the firing container and place it in the kiln on stilts to allow good heat circulation.

**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. Regardless of thickness (embedded in coconut shell-based activated carbon or Magic Carbon): Ramp at full speed to 1700°F-1800°F (927°C-982°C) and hold for 3 hours (total firing time, including



## COOL TOOLS

ramp-time, will be about 4 hours). Most firings perform well at 1700°F. However, if you discover that your pieces are not sintering properly, try firing them at 1800°F.

**Note:** Blistering may occur at 1800°F; if this occurs, slightly decrease the firing temperature.

### **For COPPRclay pieces that will be enameled:**

Follow the two-phase firing schedule below if you plan to enamel your piece.

#### **Phase 1** (*open-shelf fire*)

For pieces 3mm thick or less: Place the piece directly on the firing shelf. Ramp at 500°F/hour (278°C/hour) then hold at 560°F (293°C) for 15 minutes.

For pieces thicker than 3mm: Place the piece directly on the firing shelf. Ramp at 200°F/hour (93°C/hour) then hold at 560°F (293°C) for 15 minutes.

#### **Phase 2** (*sintering*)

Regardless of thickness: Embed the piece in recommended activated carbon inside a firing pan. Ramp at full speed to 1750°F (954°C) and hold for 3 1/2 hours. Allow the piece to cool naturally inside the kiln.

### **Finishing**

Once fired, the COPPRclay piece is a solid piece of metal. As with other metals, it can be sawn, drilled, sanded, patina-ed or soldered using traditional jewelry tools and materials. For a brown to black patina we recommend using Cool Tools Patina Gel. Keep in mind that many finishing techniques will be easier to perform at the dried, pre-fired stage.

### **Safety**

The binder in COPPRclay 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 COPPRclay. We recommend wearing a dust mask while working with the activated carbon.