



## Magic Carbon Instructions

Cool Tools Magic Carbon is a special activated firing media for firing copper, bronze and silver clays.

Magic Carbon eliminates the need for additional patina on bronze and copper.

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**How to Prime Magic Carbon:** Magic Carbon requires firing before first use in order to activate it. Follow these simple instructions to prepare a new pan of carbon.

1. Fill the stainless steel firing pan with Magic Carbon, leaving about 1" of headspace.
2. Place the uncovered firing pan on posts in the kiln. If your kiln has a peephole, plug it with a fire resistant material like fiber blanket.
3. Full ramp to 1650°F/899°C, hold 30 minutes. Leave the kiln undisturbed until the interior temperature is 300°F/149°C or less.
4. Remove the firing pan from the kiln and place on a trivet until the outside of the pan is cool enough to touch.
5. The carbon is now ready to use.

When topping off an existing batch, a layer of 1" or less added to the top of the pan does not require priming.

### Basic Firing Guidelines

- Maximum load depends on the container size. A standard firing pan, 7" x 6-1/2" x 2-3/4" tall, can hold about 250 grams of clay.
- Pieces should be completely dry before firing.
- Pieces should be placed in a single layer to avoid overloading the carbon.
- Fire samples to verify target temperature. The target temperatures given are a good starting point. Magic Carbon tends to allow firing at a lower temperature than other carbons. Instructions on determining your kiln's ideal target temperature are listed at the end of this document.
- When using Magic Carbon, always fire metal clay with the lid on. Use a slotted lid or set a standard lid ajar about 1/4" for air.

**Hold Times:** Hold times depend on the desired strength of the finished piece. For most pieces, of any thickness, a 2 hour hold time is sufficient.

- 2 hour hold: For most pieces made of Bronze or Copper Clay, any thickness. Total firing time: about 3-1/2 hours.
- 3 hour hold: For bronze cuff bracelets and anything that will be dapped or formed, any thickness. Total firing time: about 4-1/2 hours.
- Follow standard firing schedules for all types of silver clay that requires carbon firing.

**Determining Target Temperature:** Your kiln's target temperature will depend on the clay being fired and the wattage of the kiln, but ranges from 1490°F/810°C - 1550°F/843°C for bronze clay, and from 1600°F/871°C - 1700°F/927°C for copper clay. When bronze or copper clay is over-heated, it can result in a slightly grainy surface, bubbles or partial melting of the metal. Under-fired pieces can be extremely brittle or unsintered, so it's important to take the time to test your kiln before firing any of your hard work. The easiest way to determine your kiln's ideal temperature is by firing a few small test pieces. At the end of this document is an instruction for test firing along with a grid of common target temperatures to be provided as a starting point. Please note that any brand of bronze clay, or copper clay will work with this carbon and this schedule. *Exception: For Hadar's Clays please use her preferred carbon (KLN-966).*

**Making Test Strips:** We recommend 1/2" wide x 1-1/2" long and 5 cards thick. A template or shape cutter is a good way to get identically sized pieces. Use a rectangular shape as an easy way to gauge shrinkage of the samples. The test strips should be completely dry before firing.

**Kiln Wattage:** If you do not know the wattage of your kiln, you will find a manufacturer's plate attached to the side or back of the unit. The plate will give you the volts, amps and wattage of the kiln.

### Kiln Type

- Ceramic fiber kilns are easy to identify because the heating elements are not visible when you look inside the kiln. The interior is a shell with the elements molded inside.
- Brick kilns are constructed of individual bricks that are cemented together.

Kiln Type	Wattage	Bronze Clay	Copper Clay	Hold Times - Hours (All Clays)
Brick	1110W	Full to 1525°F/1829°C	Full to 1650°F/1899°C	3
	1440W	Full to 1525°F/1829°C	Full to 1650°F/1899°C	3
	1680W	Full to 1500°F/1815°C	Full to 1625°F/1885°C	3
	2000W	Full to 1490°F/1810°C	Full to 1600°F/1871°C	3
Ceramic Fiber	1110W	1000°F/538°C/hr to 1525°F/1829°C	Full to 1650°F/1899°C	3
	1440W	1000°F/538°C/hr to 1525°F/1829°C	Full to 1650°F/1899°C	3
	1680W	1000°F/538°C/hr to 1500°F/1815°C	Full to 1625°F/1885°C	3
	2000W	1000°F/538°C/hr to 1490°F/1810°C	Full to 1600°F/1871°C	3

### Firing Test Strips

- Prime carbon for first time use
- Place a single strip in the center of the firing pan, buried about 1 inch below the surface of the carbon.
- Fire at the starting point schedule for the kiln that matches most closely to your model.
- Allow the kiln to cool before removing the container to a trivet.
- The test strip can be removed with a slotted spoon to cool. Place test strip on a steel bench block to cool if still warm.

**Testing the Fired Strip:** A successful firing will pass a visual test, an audio test and a bend test.

**Visual Test:** The test strip should be free of cracks, splits, and bubbles. All sides should be smooth and free from dents.

**Audio Test:** When dropped onto a steel bench block, the test strip will have a loud ring to it... it will sound like metal.

**Bend Test:** The test strip should be able to be bent at least 90° without breaking or showing signs of cracking. To test the fired strip, use a pair of bending pliers and bend the sample. It should bend smoothly and easily to 90°. Follow the chart below to determine if your target temperature should be increased or decreased.

Result	Remedy
Grainy surface	Lower the target temperature by 15°F/90°C
Dents from carbon on back	Lower the target temperature by 15°F/90°C
Bubbly surface	Lower the target temperature by 50°F/10°C
Splits or cracks	Slow heating to 1000°F/538°C per hour. If the problem persists, slow heating to 750°F/1399°C per hour
Breaks when bent, break is grainy, but feels metallic	Extend your hold time by 1 hour
Breaks when bent, insides are powder or dark	Raise the target temperature by 25°F/4°C. If the problem persists, add additional 25°F/4°C