



Art Clay™ Copper



Explore the opportunities and
experience the simplicity of
Art Clay™ Copper Clay!

Brought to you by **Art Clay World USA**

Copper—An Ageless Metal

Copper was used by even the oldest civilizations on record, dating back over 10,000 years. In the earliest cases, the copper items were mined and pounded, hand-worked into shape; by 500BCE there is evidence of smelting. Copper artifacts have been found worldwide, used for everything from currency, to plumbing or electrical components, to religious artifacts. In fact, copper is even mentioned in the Christian Bible: "Men know how to mine silver and refine gold, to dig iron from the earth and melt copper from stone" (Job. 28:1–2).

Copper metallurgy developed historically at different rates and for different purposes across the globe. The ancient Greeks and Romans began using lumps of copper as currency, but soon progressed to coins. Copper was associated with the mythological goddess Aphrodite/Venus, likely due in part to its lustrous appearance and uses in producing mirrors and ornate jewelry. Copper was used in the creation of Corinthian Bronze, which formed the gates of the Temple of Jerusalem, made by depletion gilding.

Multiple ancient civilizations even used copper as a medical remedy: the Egyptians used it to treat wounds, headaches, and burns; the Aztecs gargled with copper to cure sore throats. In early India, copper was the substance of choice for surgical instruments. By the 1700s, copper sheathing protected ships' hulls from algae and boring organisms. Copper became a metal of choice for sculptors and statue-makers; the Statue of Liberty is mostly copper.

Today, while copper technology has come a tremendous way from ancient methods, it is still used for the same reasons. We still turn to copper for jewelry, decoration, tools, homeopathic medicine (think of those bracelets used to combat arthritis and increase circulation), and household use (consider your electrical wiring.) Its ability to conduct heat and electricity make it an easy choice for conductive purposes, and its strength make it a great choice for building material and as a constituent of many metal alloys. There is even scientific backing for copper as a medicinal item, as some copper ions function as nutrients for organisms and make up a significant concentration even in the human body, while specific other copper ions are antibacterial and antimicrobial.

The copper industry has always been a large and versatile one. Copper can be smelted, rolled, hammered, electroplated, engraved, welded, soldered, brazed, even ionized and dissolved or made radioactive.

And now, thanks to Art Clay™ Copper, it can be sculpted, textured, molded, embellished, fired in only 30 minutes, and worn or gifted proudly.

Welcome to Art Clay™ Copper, The *quick*, user-friendly copper clay!

Art Clay™ Copper is a clay material that you can use to make a wide range of pieces such as jewelry, craft designs, and larger objects like sculptures and models. Art Clay™ Copper can be fired in an electric kiln without using any type of cumbersome or restrictive media, with the resulting fired piece being 100% pure copper.

Early testing has shown amazing and lovely results when firing Art Clay™ Copper using a butane torch, and the clay has also fired beautifully using the Speedfire Cone System. These additional firing options open doors in working with Art Clay™ Copper that other non-precious metal clays do not offer. The shorter firing time now allows for a copper clay to be used or taught as a single-day class or workshop. As more artists begin working and experimenting with Art Clay™ Copper, we will also find additional



*Art Clay Copper and Silver Mixed Media Bracelet
by Arlene Mornick*

properties that allow for use with various stones, mixed media, or cross-industry techniques.

Also, thanks to the short firing time of Art Clay™ Copper, you can use your regular metal clay kiln without worry of damaging the kiln with extra-high, extra-hot firings. We hope you enjoy Art Clay™ Copper!

Safety Considerations

- Wash your hands well after using the product.
- Pieces will be hot on removing them from the kiln or firing area. Use proper heat-resistant equipment when moving pieces to or from the hot kiln, and do not place hot pieces on flammable surfaces.
- If the product comes in contact with eyes or mouth, please rinse with running water to prevent irritation.
- Be aware that some people may have a sensitivity to copper. The level of reaction is different according to the individual, from light to severe. A very minor reaction is a light green tinge to skin that has had prolonged contact with copper; this is typical and is a natural reaction between copper and the metals in your body.
- Consider wearing a dust mask when sanding; if you are already sensitive to copper, you may not want to inhale copper dust.
- If you do have an extreme sensitivity to copper, and work with and wear copper accessories made from the product, some kind of allergy reaction may occur. If in doubt, please seek medical advice from a qualified medical practitioner.
- Follow the written instructions carefully, and do not use this product for any other purpose other than those appropriate for metal clay.

Recommended Tools When Working with Art Clay™ Copper

The same tools we're used to for working with other metal clays are also perfect for Art Clay™ Copper. It is recommended, however, that a separate set of tools is kept for each specific medium, in order to avoid cross-contamination between different metals.

Standard Tools

- 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
- Firing equipment
- Copper tongs for pickling agent
- Pickling agent

Specialty Tools

- 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
- Flex shaft or other electric burnishing/polishing tool



Art Clay Copper and Silver Pendant by Carol Babineau



Copper tweezers for handling pieces during pickling. ACW #F-015



Pickling agent for removing firescale from fired copper.



Rubber-tipped sculpting tools ACW #F-251

Art Clay™ Copper Tips and Suggestions

- The percentage of copper in the Art Clay™ Copper in clay state is 90%, the remainder of the clay being moisture and organic binder. Because of this, we can plan for a **10% shrinkage rate**.
- Adhere layers together, seal seams, or fill pocks/scratches by making Art Clay™ Copper **paste**. Add a small amount of water to the clay and mix until smooth. Apply as needed and dry thoroughly before firing. Art Clay™ Copper paste has worked well for seams, attached bails, embedding items, dangling layers, etc.
- **Store** Art Clay™ Copper in a vacuum-tight sealed bag, available in most grocery or department stores (such as Wal-Mart or Target.) Place clay in vacuum bag, remove air, and place in another airtight container (a glass jar or Tupperware-style) with a moist sponge or towel to make a humidior-like environment. **DO NOT** place a moist item in the vacuum-seal bag with the clay!
- After opening a package, the surface of Art Clay™ Copper will naturally start **oxidizing** and the color will darken if left in the air. If you see a darkened surface, scrape off the layer and use the remainder to make your piece.
- Keep the clay indoors at a moderate room temperature and out of direct sunlight. **Do not refrigerate.**
- Condition any tools, molds, or textures with olive oil.
- Keep a separate set of tools for your Art Clay™ Copper (as you would for any other specific type of metal clay) in order to **minimize contamination**, which can alter the properties of the piece as a whole and produce surprising—or unpleasant—results.
- If you are very sensitive to copper, protect your hands with either conditioning agent or something like *Gloves in a Bottle*. Particularly if you have any breathing afflictions (such as asthma or COPD), wear a dust mask when sanding.
- If ever needed, **reconstitute** Art Clay™ Copper with plain water.
- Add color to fired pieces using Liver of Sulfur Patina *or* by flash-heating with a handheld butane torch.
- The **shelf-life** of Art Clay™ Copper is 6 months. Please use within this time, and soon after opening any package.

Drying Art Clay™ Copper

1. Dry completely after molding. The dried clay will become hard like plaster, and you can easily drill, file and sand with hand tools and equipment. Follow the drying instructions below:

Hot air dryer	Electric Hot Plate or Mug Warmer	Electric Kiln or Toaster Oven	Natural Air Drying
At least 20 minutes	More than 10 minutes at 300° F.	More than 10 mins at 300° F.	At least 24 hours

2. Place the dried piece on a stainless or glass plate while still warm. Leave for 10 seconds, then remove your piece and, if you do not see any condensation on the plate, drying is complete. If any condensation is present, continue the drying process in 10-minute increments until the piece is bone dry.
3. **IMPORTANT:** Do not dry the piece over 480 °F. or the binder will be destroyed and deform the shape in the firing process.

Art Clay™ Copper Firing Instructions

There are multiple options when firing Art Clay™ Copper, which is a new consideration when compared to other copper clays.

To fire Art Clay™ Copper in a kiln:

- Pre-ramp the kiln to 1778°F.
- Place the piece into a preheated kiln at 1778°F and hold for 30 minutes (use proper equipment and safety precautions when putting pieces into or taking them out of the kiln).
- Remove the red-hot piece with tongs or tweezers immediately after firing is complete and quench with cool water, so that most of the oxidized layer peels off to reveal perfect copper beneath.
- You may also put the piece into a room temperature kiln and ramp up at maximum speed to the listed temperature, but pre-heating the kiln is recommended.

To fire Art Clay™ Copper with a Speedfire Cone System:

- Place on Speedfire Cone System grate using a large propane tank and large tank adaptor. Fire at 1400 F. for at least 20 minutes. (Bear in mind that the Speedfire Cone System uses open flame; it is not a kiln environment.)
- Remove the red-hot piece with tongs or tweezers immediately after firing is complete and quench with cool water, so that most of the oxidized layer peels off to reveal perfect copper beneath.

To Fire Art Clay™ Copper with a butane torch:

- Place piece no larger than US Silver Dollar and 35 grams weight on a firing brick and heat until cherry red for at least 5-7 minutes, depending on size. Pieces 10g or less and 1mm or less in thickness can fire for at least 5 minutes; pieces up to 25g and 2.5mm thick can fire for at least 7 minutes; larger items should fire for 10 minutes.
- Remove the red-hot piece with tongs or tweezers immediately after firing is complete and quench with cool water, so that most of the oxidized layer peels off to reveal perfect copper beneath.



Disc Pendant by Carol Babineau—Torch fired!

NOTE: If a hot, fired piece is left to cool in the kiln or open air after firing, the oxidized layer will be thicker and small bits may fly into the air. If you have fired a piece and will not be quenching it, cover it immediately after firing with fiber blanket until cool.

If you would prefer not to quench your piece, and still want to prevent firescale, you may choose to bury Art Clay Copper in activated carbon, in a stainless steel firing pan, and fire for 3.5 hours at 1778°F. Allow to cool in the kiln until below 200°F. (Thanks very much to Pam East for testing and providing this schedule.) This firing style, however, is not recommended for small jewelry kilns, and is better suited to larger brick-lined glass kilns.

It is **NOT** recommended to fire Art Clay™ Copper with a Hotpot, Beehive Kiln, or any other firing apparatus that cannot hold the temperature at 1778°F for 30 minutes (with the exception of the handheld torch.)

Finishing Art Clay™ Copper

There are technically two steps to the finishing of Art Clay™ Copper.

Pickling: Place a fired piece into a solution made with pickling powder and distilled water. Heat the pickling solution to hasten the removal of the oxidation. A mini-crock pot is perfect for this. Immerse for 15 minutes or until firescale is gone. For any oxidized layers around detailed designs, consider using a polishing point with an electric rotary tool.

Please be environmentally responsible and follow the instructions included with the product for proper use and disposal of pickling solution.

Finishing: After firing, the piece is pure copper. You can enhance its natural luster with a metal brush, burnisher, polishing points, or a tumbler.

Note: Thoroughly clean your tumbler and tumbling media before and after polishing the copper, or use a separate set of brushing/burnishing tools so as not to contaminate any subsequent artwork of any other metal.



Pickling agent for removing firescale from fired copper. ACW #F-039



Convenient mini-crock pot for heating pickling solution ACW #F-222.

Embellishments with Art Clay™ Copper

Because Art Clay™ Copper does have a high kiln firing temperature, not all traditional metal clay decorations are suitable for use with this particular clay. It is not recommended to fire Cubic Zirconia with Art Clay™ Copper unless you know the stones can handle the time and temperature of the kiln requirements. However, small CZs may be usable if you are torch-firing your Art Clay™ Copper piece.



Art Clay Copper Shadowbox Lentil
by Katie Baum

Art Clay™ Copper fires very well with silver clay; be sure to fire the Art Clay™ Copper first, and pickle if necessary to remove firescale. Combine fired Art Clay™ Copper with unfired silver clay, taking into account how the silver clay will attach to the copper (either by surrounding to capture during firing, embedding copper bits, or using Art Clay Overlay Paste.) Fire the combination piece to the silver clay specifications, pickling the finished item if needed.

If you plan to design dangling pieces or use beadwork with Art Clay™ Copper, you can embed pure copper wire into the moist clay in order to create rings for attachment or leave dangling wire for adding beads.

Additional experimentation will yield even more design opportunities.

Art Clay™ Copper **is now available** **through** **Art Clay World USA**



- ◆ Fire 100% PURE copper pieces in 30 minutes—or less!
- ◆ Finally—A copper clay that can be used in a single-day class or workshop!
- ◆ No messy carbon or large steel pans!
- ◆ No kiln necessary! Fire with either a kiln, handheld butane torch, or Speedfire Cone System.
- ◆ Less than 10% shrinkage!

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