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Art in Metal Clay

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Steel Clay Guide

Instructions for Hadar's Clay™, Quick-fire Steels



This guide is written under the assumption that you are familiar with the Instruction Manual for Hadar's Clay™, Quick-fire Copper and Bronze.

Preparation

Same as Hadar's Clay™, Quick-fire Copper and Bronze (see Instruction Manual at www.youtube.com/artinsilver – select the video entitled “Hadar's Clay™ (Improved Formula) – Mixing”).

Storing the Clay

The powder clay should be stored in an airtight box in a dry area. Mixed clay should be stored in the refrigerator, wrapped in plastic food wrap in a sealed box. Before wrapping it, form it into a lump and coat it with olive oil.

Although the mixed clay has been proven to last for over a week when stored properly, it's best to mixed only the amount that you are going to use within a day or two, since the clay itself may rust. If the clay rusts, after firing it will look as if it were mixed with copper.



This piece rusted before firing, and although completely sintered after firing, it developed serious pits.

Working with the Clay

Use as little water as possible. When not working with a piece, leave it on the warming surface to protect it from moisture. If the clay feels grainy, add oil to it and roll it until it's smooth again.

Tools

There is no need for separate tools. There is no cross-contamination between steel and other metal clays. Just clean the tools when switching from one clay to another.

Storing Dry Pieces

If pieces are not fired right away, it is recommended to coat them with olive oil and wrap them in plastic food wrap.



Firing

The firing process is the same as for Hadar's Clay™, Quick-fire Copper and Bronze. The box should be covered loosely with fiber paper.

Steel	Stainless Steel
Ramp at full speed to: 1800°F/982°C (top loader kiln) 1880°F/1026°C (front loader kiln) Hold for 2:00 hours.	Ramp at full speed to: 2200°F/1204°C (top loader kiln) 3000°F/1648°C (front loading kiln) Hold for 2:00 hours

The sintering temperature of steel (not stainless) has a wide range, and can be brought up to 2000°F (1093°C). If there is no sintering in your kiln at the suggested temperature, raise the temperature by 50°F at a time, until sintering is achieved.

Shrinkage

Very close to that of copper clay (about 10%).



Finishing

After firing, the surface of non-textured steel is grainy. It can be buffed and left as is or sanded to a very smooth finish. Start with sanding drums, 80 or 120 grit.

Rusting

The specific steel powder used in this product does not rust as readily as other steels. However, it is recommended to seal it as described below.

If rust is desirable, it can be achieved by exposing the metal to water over a few days (repeatedly dip in water and let dry in the air), or by using a rusting patina. The patina is available from hardware stores and craft supply stores, such as Michael's. After rusting, sealing is required, or the steel will keep rusting and eventually disintegrate.

Protecting from Corrosion

Clean the piece with denatured alcohol (available from hardware stores). Rub the piece with machine oil. You can use Birchwood Casey oil (available from Amazon), or rust inhibitor spray (available from hardware stores).



After the oil is dry, seal again with Carnauba Wax (available online and from auto supply stores) or Renaissance Wax.



Patina

There are many ways to blue steel and a continuing debate as to which way is best. Suggested here are two processes for bluing. If performed prior to sealing, both contribute to the sealing quality.

Hot Bluing (also called tempering)

Heat the piece with a torch. When the desired color appears, immediately dip in cold water. You can also heat it in a kiln up to about 600°F/315°C. For even color bury the piece in alumina hydrate. The color is an oxide layer that provides some protection from further rusting, but sealing is still required.



This rock was held by the wire and heated gradually with a torch until it turned dark blue. After quenching it looked like hematite.

Cold Bluing

Blue patina can be also achieved by applying a little bit of Birchwood Casey Super Blue (available from Amazon). After bluing, sealing should be done with oil and wax as described above.



Hot Bluing



Cold Bluing



In actual life the blue color is more subtle than in photos.