

PATINATION

Shibuichi can be patinated to a wide range of grays, olive greens and even sky blue. Pale greens can be produced by alternately swabbing with clear ammonia and rinsing in warm water. A similar green can be produced on the fine silver surface left from reticulation by swabbing with a 50/50 mixture of ammonia and vinegar. The work is then suspended in a closed warm container with a pad soaked in ammonia. Heavy textured greens can be produced by adding salt to the ammonia/vinegar solution. **Baldwin's Patina** will produce grays and pale olive greens. These colors will also appear after extensive handling. Patinas may be waxed or sealed to help prolong their life. They will inevitably change with time and usage. The chemical balance of the wearer may also affect the color.

GUIDE TO HEAT COLORING

The following technique is used in the Thin Cast studios of D.L. Downer to color shibuichi cast products. The temperatures are quite high and require that hard solders be used in fabrication. There are a lot of steps in their process and we are unsure if all are necessary. It works well but can be modified to fit your studio. You may want to try your own process with this as a guide. It is important to start with clean metal.

- 1) Dip into hot sudsy ammonia. Be sure to be under good ventilation and boil it dry with a torch and repeat.
- 2) Brass brush with sudsy ammonia. It will appear silvery.
- 3) Heat to a dull red. As it cools it will appear black.
- 4) Using an extreme oxidizing flame pass the piece in and out of the heat. The colors will change each time. Use a fan to cool the piece when it looks just right. **DO NOT QUENCH!** Worst case scenario, pickle it and start over again. If the piece is handled after coloring, wash thoroughly and rinse in acetone to totally degrease. A clear lacquer like Incalac can help increase the life of the patina. It is just a patina; wear and the environment it lives in will affect it over time.

ALLOY CASTING

Both Shibuichis start to melt at 1432°F (777°C). The 25% is fully melted at 1750 °F (954°C), 15% at 1825°F (996°C). Both should cast very well with good flow properties. In addition they have a deoxidizer added, so you should have little trouble with gas. Melt with a neutral flame. The flask should be fairly cool, about 300-500°F (148-260°C).

The shakudo is more difficult to cast, it is like pure copper. It is molten at about 1975°F (1079°C), and is prone to shrink porosity. Make sure you have an adequate head for the casting to draw from. The flask should be fairly hot, say 500-700°F (260-371°C). Melt with a neutral flame.

In both cases do not overheat the metal, as soon as it melts, pour it. If you have trouble filling the cavity, increase the flask temperature.



Shining Wave Metals

Data Sheet

**Shakudo
&
Shibuichi**

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4% SHAKUDO

HISTORY

This is the classic Japanese Shakudo (pronounced- shă´• koo • dô´). The first known use of this alloy was in cast form during the Han Dynasty in China. The development of the alloy was most likely a result of smelting gold bearing copper ores. It was later used by Japanese craftsmen in wrought form mainly for sword furniture. The alloy was frequently used as a base for gold inlay.

WORKING THE MATERIAL

The alloy contains 4% fine gold in a 96% copper base. Cold works very much like copper, but slightly harder. Finer grained than pure copper. Hot forges easily, very plastic. Forging above 1688°F/920°C is not recommended. The approximate melting point is 1900°F/1037°C and the annealing range is 1150 to 1350°F (621-732°C). Anneal to a dull red glow and air cool or quench.

NOTE: HOT WORK THIS MATERIAL AT YOUR OWN RISK. DOING SO WILL VOID THE WARRANTY.

PATINATION

Prior to patination Shakudo looks much like plain copper. Dark purple to black oxides can be grown with relative ease. The oxidation solutions can be applied in such a way that silver and high karat gold alloys are not affected. The high contrast produced when this metal is used with other metals can be striking.

When heated, Shakudo forms a tough firescale similar to sterling silver. Firescale must be completely removed by abrasive or chemical means prior to patination or the color will appear blotchy. 4% Shakudo will develop a gold rich coating with repeated heating and pickling or by etching in strong acids. This coating must be removed to obtain the highly desirable purple-black patina.

Baldwin's Patina is specially formulated to color Shakudo. First use **No Name Patina Prep** for best results. Next warm the piece under warm running water. Shake off the excess water. Now rub a small amount of the patina solution onto the alloy with a Q-tip or soft cloth until the desired color is achieved. Stop the action with a water rinse and repeat. Other coloring techniques include the application of either traditional Japanese rokusho or simple ammonia. The work can be suspended in a sealed container (plastic bag) with an open vessel of ammonia.*

USES

For use in jewelry, flatware and other decorative metalwork. Not recommended for continuous skin contact items or for contact with moist foodstuffs.

5% • 15% • 25% SHIBUICHI

HISTORY

The first known use of these alloys was in cast sculptures during the Han Dynasty in China. A similar alloy was used by pre-Columbian metalsmiths. The pre-Columbians depletion plated the alloy to form a silver rich surface that polished to look like silver. The alloy was adopted in Japan for use in sword furniture.

These are three classic Japanese alloys containing 25%, 15% and 5% fine silver in a copper base. The alloys are both tough and hard, yet maintain excellent cold forming properties. The 15% is softer and more colorable, while the 25% is springy and reticulates the best. The metals are a creamy pink color in the natural state. The 25% is an excellent reticulation alloy and may be depletion plated and reticulated using the methods described in most texts.

WORKING THE MATERIAL

5%: Cold works very much like copper but slightly harder. Somewhat hot short, hot forging not recommended without careful temperature control; do not forge above 1200°F/650°C. Anneal to dull red (1200°F/650°C) and air cool or quench. Melting point starts at 1742°F/950°C and is fully molten at about 1922°F/1050°C.

15%: This alloy is malleable but very stiff and work hardens quickly. Can be rolled to half its thickness without annealing. Machines fairly well with sharp cutting edges. Somewhat hot short, hot forging not recommended without careful temperature control; do not forge above 1200°F/650°C. Anneal to dull red (1200°F/650°C) and air cool or quench. Melting point starts at 1418°F/770°C and is fully molten at about 1832°F/1000°C. This alloy casts very well.

25%: This alloy is malleable but very stiff and work hardens quickly. Can be rolled to half its thickness without annealing. Machines fairly well with sharp cutting edges. This alloy is hot short, hot forging not recommended without careful temperature control; do not forge above 1200°F/650°C. Anneal to dull red (1200°F/650°C) and air cool or quench. Melting point starts at 1418°F/770°C and is fully molten at about 1742°F/950°C. This alloy casts very well and is very tough.

NOTE: HOT WORK ANY OF THIS MATERIAL AT YOUR OWN RISK. DOING SO WILL VOID THE WARRANTY.

USES

For use in jewelry, flatware and other decorative metalwork. Not recommended for continuous skin contact items or for contact with moist foodstuffs.