

# Copper to Enhance Your Turnings

## **Intro:**

- Using copper as a decorative metal is at least 6000 years old.
- Turners are increasingly using mixed media strategies to enhance their “round and brown creations.
- Copper is a relatively unexplored material to enhance wood turnings although it has been used in furniture especially in the Art Nouveau and Craftsman movements of the early 20<sup>th</sup> century.
- Today I will present a few ways to incorporate copper in your turnings. I will also list sources of the various shapes and forms of copper, basic tools to work the copper and some unique properties of copper.

## **Metals used in decorative arts:**

Gold Silver Copper Aluminum Pewter Brass Bronze Iron

- Roughly in order of increasing hardness and increasing difficulty in working.
- Copper is a nice balance of good workability and low cost.
- Copper is available in a wide range of forms and shapes.
  - Paints, powders, foils, sheets (smooth and textured), wire, and rods.
- Soft copper can be easily shaped into very complex shapes without breaking.
- When worked (bending, hammering, twisting, etc), copper becomes “work hardened” and will become brittle. This is a general property of most metals. Mechanical working of metal will break up the molecular structure and the metal becomes more brittle. To restore the original properties of the metal, it must be heated to a specific temperature range and cooled in a specific manner. The procedure depends on the metal. For copper, heating “dead hard” (work

hardened) metal to a dull red and quenching rapidly in cold water will restore its soft properties “dead soft”. This procedure is called ANNEALING.

### **Sources of copper**

-Electrical wire stripped of its insulation can be used. It has a narrow range of sizes however and it must be annealed before using. Still it is rather cheap if “cut offs” can be had for little or no cost.

-Copper wire for decorative purposes (jewelry) is a better choice if you plan to use it a lot.

- Available in coils and spools and usually sold by the pound.

- Available as dead soft or dead hard.

- 6 gauge to 28 gauge. **EXPLAIN GAUGE**

- Round, ½ round, square, strips, (some with embossed patterns)

- Twisted wire....**DEMONSTRATE.**

-Copper sheets

- Smooth and patterned. 16 gage-34 gauge usually in 6”x12” sheets.

-Copper foil

- In rolls and 36-40 gage. Available at Michael’s and Hobby Lobby

Copper leaf

- Not covered here...a whole other topic.

Copper screen and mesh.

- Have not used this product.

## **Metal Working Tools**

-Don't spend a lot on tools...Harbor Freight is okay.

-Shears and Scissors

-Files. Large and small (jeweler's files)

-Pliers. Round nose, flat nose. Hobby Lobby/Michael's brand for \$7-9

-Wire cutters. Electrician's diagonal cutters, special flush cutters.

-Small Anvil (10-15lbs)

-Wood hammering blocks (pine-maple)

-Assorted hammers. Ball peen, cross peen, planishing, rubber, Deldrin, etc)

-Electric drill and small drill bits (numbered 1-60 best)

-Center punch

-Mapps gas torch.

-Dremel drill and attachments is most useful.

## **Texturing**

-Impart an interesting texture to an otherwise plain surface.

-Hammering with a leather-covered rubber hammer on various textured surfaces.

-Concrete, rocks, tree bark, sand mortar...look around, be creative.

-Direct hammering with textured tools.

-Use a ball peen hammer to create random dimples. Support the copper sheet with substrates of various hardness.

-Hammering wire. Use 10 gage or larger and ball peen hammer for dimples.

-Coiling and twisting. Not covered in this demo. Google wire wrapping techniques.

### **Patina Techniques**

-When copper is exposed to the atmosphere a slow chemical reaction takes place. The copper forms oxides and these are seen as color changes. Orange-red-blue-grey-black. Depending on other chemicals in the atmosphere other colors develop. The most commonly experienced is the blue green oxidation state.

-When a compound known as Liver of Sulfur is dissolved in water and copper is submerged in it, the surface turns from pale blue to grey to black. When the technique is applied to a textured surface, rinsed to stop the reaction, air dried and buffed with fine steel wool or 800 grit sandpaper, beautiful effects can occur.

-I have a 5 life-time supply in my shop and if you want to try it out, let me know and I will give you enough Liver of Sulfur to last a casual user a long time.

### **Web sites for copper metal**

-[www.riogrande.com](http://www.riogrande.com)

-[www.metalliferous.com](http://www.metalliferous.com)

-[www.monsterslayer.com](http://www.monsterslayer.com)

### **Web sites of patina formulas and chemicals**

-[www.sciencecompany.com/patinas](http://www.sciencecompany.com/patinas)

