

Liver of Sulfur



Liver of sulfur on brass.



Liver of sulfur on copper.



*Liver of sulfur on sterling,
partially removed.*



*Liver of sulfur on sterling, burnished
(with 24k gold keum-boo).*

Process

Dissolve a small piece of liver of sulfur in warm water and dip the metal into the solution. Though not required, it is common practice to rinse in running water and dip again, using many repeated dips to develop an even color.

Patina Basics

Safe Color Solutions for Metalsmiths

Heat Patinas



Torch on copper.



Torch on brass.



Peanut oil on copper.



Peanut oil on brass.



*Copper in the oven;
300° F for 30 minutes.*



*Copper in the oven;
350° F for 20 minutes.*

Process

It couldn't be easier — apply heat in some way until you see the color you like. Use a torch, stove, hot air gun, or anything else that will develop oxides on metal.

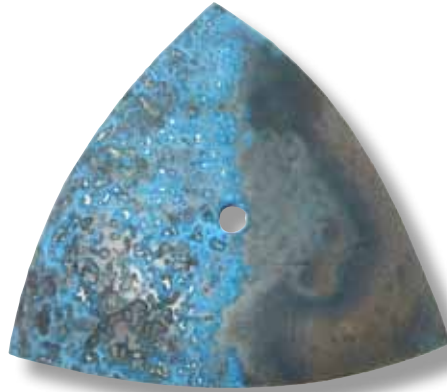
Patina Basics

Safe Color Solutions for Metalsmiths

Fumed Patinas



Ammonia fumes on copper; 24 hours.



Ammonia fumes on brass; blue section was sprinkled with salt.



Ammonia fumes on brass; 24+ hours.



Ammonia fumes on copper; 12 hours.



Red wine vinegar on brass, 18 hours.

Process

Isolate a clean sample in a container or plastic bag along with an open vessel containing ammonia or some other fuming agent. For these pieces, I set a bottle cap filled with ammonia under an inverted food storage container.

Recipes

Try anything that creates fumes (often identified by a strong smell). Heat usually activates the fumes.

Fumes can be unhealthy: avoid contact and strong inhalation.

Patina Basics

Safe Color Solutions for Metalsmiths

Basic Green Patinas



Green #1 on copper.



Green #2 on copper.

Green #1

Recipe

1 part ammonium chloride
6 parts copper sulfate
water

Green #2

Recipe

1 part ammonium chloride
1 part table salt
2 parts copper sulfate
water

Process

Paint or spray the patina solution on clean metal and allow to dry naturally. Repeat as needed until the color appears, which could require as many as a 5-10 coats. Note: the patina solution is safe but the crusty green compound is unhealthy; wash hands after handling and keep away from children and pets.

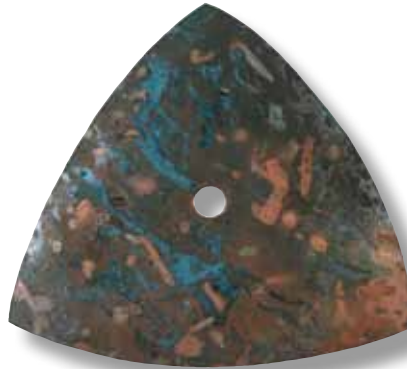
Patina Basics

Safe Color Solutions for Metalsmiths

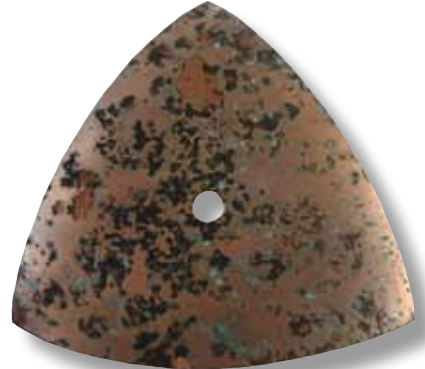
Buried Patinas



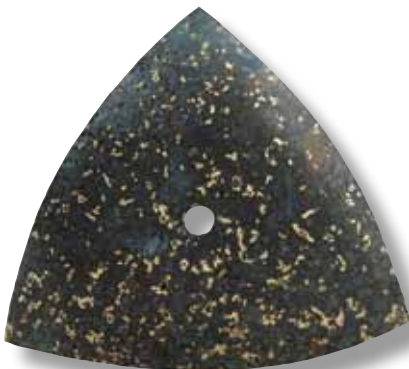
Ammonia / vinegar in pine sawdust on copper.



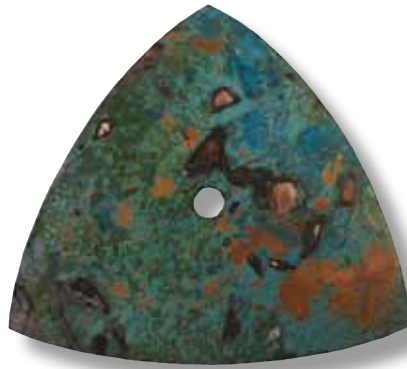
Commercial green solution in coarse wood chips on copper.



Ammonia / vinegar in coffee grounds on copper.



Commercial green solution in pine sawdust on brass.



Commercial green solution in large sawdust on copper.



Ammonia / vinegar in shredded paper on copper.

Process

Saturate a disposable porous media with a coloring agent so that the material clumps together when squeezed. Insert clean metal and seal the container. Allow the work to sit, covered, typically for 12–36 hours.

Recipes

Almost any coloring solution is worth a try. These samples were made with an ammonia/vinegar solution or with commercial green patina.

Media

As demonstrated here, the range of media is almost endless. Subtle variations such as the type of sawdust used (e.g., pine versus maple) can yield interesting results.

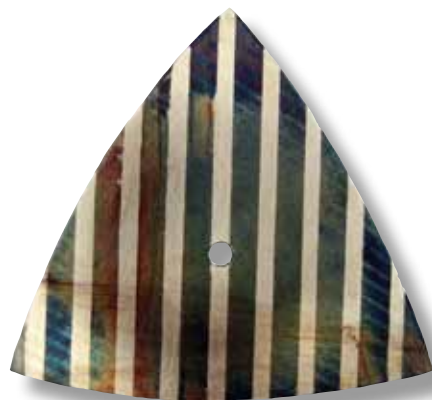
Patina Basics

Safe Color Solutions for Metalsmiths

Resist Patinas



Sharpie ink on brass, colored with gun bluing, removed with acetone.



Sharpie ink on Argentium, colored with liver of sulfur, removed with acetone.



Sugar icing on brass, colored with gun bluing, removed with hot water.



Mustard on copper, sealed under a container to fume for 24 hours, removed with hot water.

Process

Cover some portion of a clean metal piece with a material that can be removed in some way that won't damage a patina. Color in any way appropriate to the metal and form.

Japanese Patinas



Niage on brass.



Niage on copper.



Su-tanpan on sterling.



Firubi on sterling.

Su-tanpan

Combine four parts of copper sulfate with one part table salt and stir into a generous amount of vinegar. Paint or immerse as needed to develop the color.

Furubi

Combine five parts of copper sulfate with one part table salt and stir into water. Paint or immerse as needed to develop the color. This is very similar to su-tanpan but uses water instead of vinegar.

Niage

Equal parts of rokusho and copper sulfate in water. Heat to a simmer and immerse clean metal objects for as long as needed to achieve the desired color (it is not instant). Colors move through gray, rust, red, to dark brown.