

Area Research Paper

PATINATION WITH NON-TOXIC SOLUTIONS

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PATINATION WITH NON-TOXIC SOLUTIONS

A Patina is a thin layer of corrosion, usually brown or green, that appears on copper or copper alloys as a result of natural or artificial oxidation.

The purpose of coloring metal is to produce a change in its appearance in a short time. This could take place naturally but would take much longer and would require controlled conditions. The natural discoloration of metal surfaces after exposure to air, moisture, and gases is actually a combination of corrosion and oxidation which alters the composition of the metal's surface.

Coloring is the final process, after all soldering and polishing have been completed. Coloring will not conceal any surface defects. In some cases, the defects will actually be more exposed. Good ventilation is important for any chemical coloring process. The coloring should be done near an exhaust fan, or even outside.

Many of the solutions and chemicals used for patinas are extremely toxic and corrosive and are difficult to dispose of after they are used. Some of the chemicals are difficult to find and the solutions have complicated procedures. In this paper I researched simple, fairly non-toxic solutions for use on copper, brass, and sterling silver. Each piece of metal has been slightly formed with a hammered texture, a high polish, and sandblasted finish to show the different effects that a patina can have on various surfaces.

I have chosen procedures that are for the most part environmentally friendly and economical for metalsmiths. I have provided samples and formulas that use common chemicals. The same chemical can produce varying results. Most of the chemicals are made with household products and ingredients found in your kitchen. The most toxic is liver of sulfur, or potassium sulphide, which requires proper ventilation when used. It is essential to have proper ventilation because when liver of sulfur is heated it emits toxic fumes. It is a good idea to use proper ventilation with any chemical coloring.

Coloring can be done by various methods. There are certain factors in the coloring of metals which make it less than an exact science, and this should be noted. The composition of the metal is one factor. The reaction of the metals to the chemical agents will vary depending on the alloy composition. The temperature of the chemical, the time allowed for the change, whether the metal is sheet or cast, and the purity of the chemicals are all factors which can influence the results. For these reasons, it is important to do test pieces of the various solutions and applications.

APPLICATION METHODS

1. COLD FUMING OR VAPOR

Metal surfaces can be colored by exposure to fumes or vapors, for varying lengths of time. A simple method for doing this is to place the object on a small platform or hung on a wire in a large plastic container or bag. The platform or the wire should not be metal because it will affect the coloring process. Pour the coloring agent onto the bottom of the container. The object must be above the patination agent. The container is sealed and left to affect the metal.

2. PAINTED SOLUTIONS

The solution is painted on with a soft bristle brush or swab. To obtain an even surface a

tiny amount of soap or some alcohol can be added to the solution to act as a binding agent. The metal is allowed to dry and the application is repeated until the color is developed. This method can be done with a cold or a warm solution. For warming the solution, use a glass container, such as pyrex. It can also be done by heating the metal with an oxidizing flame and alternately painting the solution on the heated area until the color is achieved. It is important to apply the solution on lightly. There should be no flooding of the solution.

3. SPRAYED ON

This results in an even or evenly speckled effect on the surface. This application works best on three dimensional objects. Repeated applications have the best results. Coloring rarely occurs with one application, but requires a series of spraying and drying, for several coats. Remember to keep the application coats light. This method can be applied with a cold solution on metal that is heated using a soft flame with a torch. Once again, this is done in a series of spraying and heating for several coats until the desired color is achieved.

4. IMMERSION

The object is immersed in the chemical solution, at cold to boiling temperatures, for various lengths of time. Larger objects take more immersion time in the solution. The object is dipped directly into the solution. It is important to wear rubber gloves with this procedure to prevent oils from your fingers from collecting on the object to be colored and to prevent exposure from the solution to the skin. The solution can be heated using a glass container such as pyrex, which can be heated on a hot plate.

5. MOISTENED SHAVINGS OR PACKING

This application results in a stippled and mottled surface with variegated colors. Moistened, not wet, wood shavings or rice work very well for this patination. The object to be colored is packed or surrounded with the chemical solution than has moistened the sawdust or rice for an extended period of time. It is the close contact of the sawdust or rice and the solution that results in the stipple or mottle surface. Use this application in a sealed plastic container to prevent evaporation. The medium used must be evenly moistened with the solution. This is done by gradually adding small amounts of the solution to the medium and working it in by hand. It is essential to wear rubber gloves when moistening and mixing the medium. If the medium is too dry the effect will be in localized points of contact. If the medium is too moist, the result will be pooling, causing unevenness or patchiness. As a guide for the correct amount of moisture there are two things that you can do. Take a handful of the sawdust or rice and squeeze as hard as possible. It should not drip any drops of the solution. Second, if the medium is tamped on a plastic sheet it should only leave a trace of moisture. It should not wet the surface.

When the color has been achieved the object is removed from the container and medium, and allowed to air dry. The loose particles are brushed off and the piece can be rinsed under cold water.

PROCEDURE

1. PREPARING THE METAL

The object to be colored, whether it is large or small, must be absolutely clean to receive the chemicals properly. The object should be free of grease, dirt, or any oxide which may have

formed on the surface from heating or exposure. Cleaned metal should not be handled, and should not be exposed to air for extended periods of time. The coloring should be applied immediately after cleaning.

Finish the metal either to a high polish, sandblast, or if textured, rub the piece well with pumice to completely remove the oxide layer on the surface and to provide small scratches for better adhesion of the patina.

2. CLEAN THE METAL

The end result is greatly dependent on the care put into the cleaning and preparation of the metal surface before beginning to patina. To develop an even patina the surface must be absolutely grease free.

A simple procedure is:

1. Pickle the piece in a suitable acid.
2. Boil the piece in a solution of baking soda and water for 5 minutes.
3. Rinse the piece for 3-5 minutes under cold running water.
4. Clean with a solution of ammonia and water. The ratio is 1/3 ammonia to 2/3 water. At this stage it is important to put on rubber gloves to keep the oils from your fingers away from the surface of the piece.
5. Rinse the piece for 3-5 minutes under cold running water, to remove the cleaning solution.
6. Dry the piece either in sawdust or dry with a soft cloth.

Do not touch the surface once it is free from grease.

IMPORTANT NOTE

The patina is the final step for the piece. Once the piece has the patina, it is important to seal the patina with a resist. The resist can be a wax, or a spray fixative. To wax the piece, rub a small amount of wax onto the surface and lightly buff with a soft cloth. Wax works well on smooth surfaces. Renaissance wax works well, as does butchers wax. Be careful if using butchers wax that it does not contain any stripping or anti-tarnish agents. Spray fixative works best on textured pieces. Use a matt acrylic spray. Krylon Acrylic Spray Matt Finish (no. 1306) is good. It is available from most art supply stores. If the piece is not sealed, the grease from your fingers and the atmosphere will alter the patina.

The following pages contain samples and formulas for coloring copper, brass, and sterling silver.

COPPER

LIVER OF SULFUR (Potassium sulphide)

Colors: range from magenta/blue to brownish gray to gray black.

DIRECTIONS:

2-4 cups of water

add a chunk of liver of sulfur the size of a pea.

This patina should be done in a well ventilated area. Use a container that can be heated on a hot plate. A glass container, such as pyrex, works best. Heat the solution, but do not boil. Dissolve the liver of sulfur completely. Test and adjust the strength of the solution. Make sure the metal is perfectly clean and free of any oil. Wearing rubber gloves, hold the piece by the edges and dip into the warm solution until the color is achieved. A dark color is best to be built up slowly, by alternately dipping and rinsing in cold water. If the surface is uneven try scrubbing very lightly with a green scotch-brite pad, then continue rinsing and dipping. For small areas this solution can also be applied with a brush, but be careful when rinsing that streaking does not occur. When the desired color is achieved, dry thoroughly and wax. If the metal is textured, use a matt acrylic spray.

COPPER

LIVER OF SULFUR AND HYDROGEN PEROXIDE

Colors: range from magenta/blue to green.

DIRECTIONS:

2-4 cups of water

a chunk of liver of sulfur the size of a pea

1-2 teaspoon of hydrogen peroxide.

This patina should be done in a well ventilated area. Use a container that can be heated on a hot plate. A glass container, such as pyrex, works best. Heat the solution of water and hydrogen peroxide, but do not boil. After the solution is heated, add the liver of sulfur and dissolve completely. The solution will become milky. Test and adjust the strength of the solution. Make sure the metal is perfectly clean and free of any oil. Wearing rubber gloves, hold the piece by the edges and dip into the warm solution until the color is achieved. The color is best to be built up slowly by alternately dipping and rinsing in cold water. If the surface is uneven, try scrubbing very lightly with a green scotch-brite pad, then continue rinsing and dipping. For small areas this solution can also be applied with a brush, but be careful when rinsing that streaking does not occur. When the desired color is achieved, dry thoroughly and wax. If the metal is textured, use a matt acrylic spray.

COPPER

LIVER OF SULFUR AND AMMONIA

Colors: range from magenta/blue to a black.

DIRECTIONS:

2-4 cups of water

add a chunk of liver of sulfur the size of a pea

1-2 tablespoon of ammonia

This patina should be used in a well ventilated area. Use a container that can be heated on a hot plate. A glass container, such as pyrex, works best. Heat the solution, but do not boil. Dissolve the liver of sulfur completely, then add the ammonia. Test and adjust the strength of the solution.

Make sure the metal is perfectly clean and free of any oil. Wearing rubber gloves, hold the piece by the edges and dip into the warm solution until the color is achieved. The color is best to be built up slowly, by alternately dipping and rinsing in cold water. If the surface is uneven, try scrubbing very lightly with a green scotch-brite pad, then continue rinsing and dipping. For small areas this solution can also be applied with a brush, but be careful when rinsing that streaking does not occur. When the desired color is achieved, dry thoroughly and wax. If the metal is textured, use a matt acrylic spray.

COPPER

HEAT (immersion)

Color: variegated red gloss.

DIRECTIONS:

Object heated and plunged into boiling water.

The object is heated evenly to a full red/orange color using a blow torch or a kiln. It is then immediately plunged into a bath of turbulently boiling water. When it has cooled to the temperature of the water, it is removed from the bath and washed in cold water. It is then dried and a wax finish used.

The temperature of the object as it enters the water is critical. The boiling water and the heat source should be arranged so that not too much heat is lost during the transfer into the water.

This patina is best on small scale objects to obtain an even color.

COPPER

AMMONIA AND RICE

Color: blue-green mottle, semi-matt.

DIRECTIONS:

ammonia

rice or sawdust

The object to be colored is packed in rice or sawdust which has been evenly moistened with ammonia, and left for 7 days. When the color has developed the object is air dried, loose particles brushed off, then rinsed in cold water. The object is allowed to dry, then finally sprayed with a matt acrylic spray.

COPPER

AMMONIA (cold fuming)

Color: blue-green semi-matt.

DIRECTION:

ammonia

cold fuming or vapor technique.

The object to be colored is placed on a small platform or hung, do not use metal, in a large plastic container. Pour ammonia onto the bottom of the container and seal. Let it sit for seven days. When the color has developed the object is removed and air dried then sprayed with a matt acrylic spray.

COPPER

SOY SAUCE AND RICE

Color: blue-green mottle, semi matt.

DIRECTIONS:

soy sauce

rice or sawdust

The object to be colored is packed in rice or sawdust which has been evenly moistened with soy sauce and left for 7 days. When the color has developed the object is air dried, loose particles brushed off, then rinsed in cold water. The object is allowed to air dry, then sprayed with a matt acrylic spray.

COPPER

VINEGAR (cold fuming)

Colors: blue-green, semi matt.

DIRECTIONS:

vinegar(red wine, balsamic, white, or apple cider)

cold fuming or vapor technique.

The object to be colored is placed on a small platform or hung, do not use metal, in a large plastic container. Pour the vinegar onto the bottom of the container and seal. Let it sit for 2 days. When the color has developed the object is removed and air dried, then sprayed with a matt acrylic spray.

COPPER

VINEGAR AND RICE

Colors: blue-green mottle, crystal.

DIRECTIONS:

vinegar (red wine, balsamic, white, or apple cider)
rice

The object to be colored is packed in rice which has been evenly moistened with vinegar and left for 7 days. When the color has developed, the object is air dried, then sprayed with a matt acrylic spray.

COPPER

SALT AND SAWDUST

Colors: reds-brown mottle, semi matt.

DIRECTIONS:

salt (1/3 the amount of sawdust)
sawdust
water

The object to be colored is packed in sawdust mixed with salt and evenly moistened with water. The object is left for 14 days. When the color has developed the object is air dried, then rinsed in cold running water. Once dry, spray with a matt acrylic spray.

COPPER

SALT, STEEL, AND SAWDUST

Colors: brown-black stipple, semi matt.

DIRECTIONS:

salt (1/4 the amount of sawdust)
steel filings (1/3 the amount of sawdust)
sawdust
water

The object to be colored is packed in sawdust mixed with steel filings, and salt. This mixture is evenly moistened with water. The object is left for 4 days. When the color has developed, the object is air dried, then rinsed in cold running water. Once dry, spray with a matt acrylic spray.

COPPER

VINEGAR (sprayed on)

Color: orange-brown, semi gloss.

DIRECTIONS:

Vinegar (red wine, white, or apple cider)
soap, a few drops to act as a binding agent.

The object to be colored is heated with a torch and the solution is applied lightly with a spray bottle. Repeated application of the vinegar gives the best results. The metal will gradually change from orange to brown. Allow the object to cool completely, then wax.

COPPER

PEANUT OIL

Colors: range from brown to black variegated, semi gloss.

DIRECTIONS:

peanut oil
heat

The object is rubbed with a light coat of peanut oil. Rub the oil on with a soft cloth, or your hands. Place the object on a fire brick in an annealing pan and begin to heat with a soft flame using a torch. Once the peanut oil begins to smoke, remove the flame. Let the peanut oil smoke until it stops. At this time decide on the color you want. Either let the object cool completely, or add more heat to achieve a darker patina. If the finished piece is cooled, and the surface of the peanut oil is still sticky to the touch, you have not heated it enough. If this occurs, repeat the heating and smoking process. The peanut oil should form a hard shell on the surface of the metal. This is most effective on 3 dimensional objects because the oil will run down the object and create an interesting effect.

COPPER

GARLIC

Colors: orange to red variegated, gloss.

DIRECTIONS:

garlic cloves crushed

The object to be colored is coated with crushed garlic placed in a plastic zip lock bag or a plastic container with a cover and set in the sun for 8 hours. Once the color is achieved, rinse with cold water, dry, and wax.

COPPER

CAT URINE IN CAT LITTER

Colors: blue-green mottled, semi matt.

DIRECTIONS:

self clumping cat litter, no perfumes or dyes added.

cat urine

Scoop the clumps of cat urine and litter in a plastic container and bury the object to be colored in the moist cat litter. Seal the container and let it sit for 2-3 weeks. Remove the object and let it air dry, brush off any loose litter, rinse with cold water, than spray with a matt acrylic spray.

BRASS

LIVER OF SULFUR (Potassium sulphide)

Colors: range from subtle gold to green-gray.

DIRECTIONS:

2-4 cups of water

add a chunk of liver of sulfur the size of a pea.

This patina should be done in a well ventilated area. Use a container that can be heated on a hot plate. A glass container, such as pyrex, works best. Heat the solution, but do not boil. Dissolve the liver of sulfur completely. Test and adjust the strength of the solution. Make sure the metal is perfectly clean and free of any oil. Wearing rubber gloves, hold the piece by the edges and dip into the warm solution until the color is achieved. The color is best if built up slowly, by alternately dipping and rinsing in cold water. If the surface is uneven try scrubbing very lightly with a green scotch-brite pad, then continue rinsing and dipping. For small areas this solution can also be applied with a brush, but be careful when rinsing that streaking does not occur. When the desired color is achieved, dry thoroughly and wax. If the metal is textured, use a matt acrylic spray. Brass takes longer to achieve a color. Don't give up. Keep on dipping.

BRASS

LIVER OF SULFUR AND HYDROGEN PEROXIDE

Colors: range from a orange to gray, gloss.

DIRECTIONS:

2-4 cups of water

a chunk of liver of sulfur the size of a pea

1-2 teaspoons of hydrogen peroxide.

This patina should be done in a well ventilated area. Use a container that can be heated on a hot plate. A glass container, such as pyrex, works best. Heat the solution of water and hydrogen peroxide, but do not boil. When the solution is heated, add the liver of sulfur and dissolve completely. The solution will become milky. Test and adjust the strength of the solution. Make sure the metal is perfectly clean and free of any oil. Wearing rubber gloves, hold the piece by the edges and dip into the warm solution until the color is achieved. The color is best if built up slowly, by alternately dipping and rinsing in cold water. If the surface is uneven, try scrubbing very lightly with a green scotch-brite pad, then continue rinsing and dipping. For small areas this solution can also be applied with a brush, but be careful when rinsing that streaking does not occur. When the desired color is achieved, dry thoroughly and wax. If the metal is textured, use a matt acrylic spray.

BRASS

LIVER OF SULFUR AND AMMONIA

Colors: range from a gold/orange to a gray/blue, gloss.

DIRECTIONS:

2-4 cups of water

add a chunk of liver of sulfur the size of a pea

1-2 tablespoons of ammonia

This patina should be used in a well ventilated area. Use a container that can be heated on a hot plate. A glass container, such as pyrex, works best. Heat the solution, but do not boil. Dissolve the liver of sulfur completely, then add the ammonia. Test and adjust the strength of the solution. Make sure the metal is perfectly clean and free of any oil. Wearing rubber gloves, hold the piece by the edges and dip into warm solution until the color is achieved. The color is best if built up slowly, by alternately dipping and rinsing in cold water. If the surface is uneven, try scrubbing very lightly with a green scotch-brite pad, then continue rinsing and dipping. For small areas this solution can also be applied with a brush, but be careful when rinsing that streaking does not occur. When the desired color is achieved, dry thoroughly and wax. If the metal is textured, use a matt acrylic spray.

BRASS

AMMONIA AND RICE

Color: blue-green mottle, semi matt.

DIRECTIONS:

ammonia

rice or sawdust

The object to be colored is packed in rice or sawdust which has been evenly moistened with ammonia, and left for 7 days. When the color has developed, the object is air dried, and loose particles are brushed off. The object is then sprayed with a matt acrylic spray.

BRASS

AMMONIA (cold fuming)

Color: blue-green, semi matt.

DIRECTIONS:

ammonia

cold fuming or vapor technique

The object to be colored is placed on a small platform or hung, but do not use metal, in a large plastic container. Pour ammonia onto the bottom of the container and seal. Let it sit for 7 days. When the color has developed the object is removed, air dried, then sprayed with a matt acrylic spray. It is important to note that if the brass is left for longer than 7 days stress corrosion can occur. The ammonia is an acetic acid and corrosion can occur, which results in hairline cracks on brass.

BRASS

SOY SAUCE AND RICE

Color: yellow to green/blue mottle, semi matt.

DIRECTIONS:

soy sauce

rice or sawdust

The object to be colored is packed in rice or sawdust which has been evenly moistened with soy sauce and left for 7 days. When the color has developed the object is air dried, and loose particles brushed off. The object is then rinsed in cold water and allowed to air dry again. When dry, spray with a matt acrylic spray.

BRASS

VINEGAR (cold fuming)

Colors: green to green/blue crystal, semi matt.

DIRECTIONS:

vinegar (red wine, balsamic, white, or apple cider)
cold fuming or vapor technique

The object to be colored is placed on a small platform or hung, do not use metal, in a large plastic container. Pour the vinegar onto the bottom of the container and seal. Let it sit for 2 days. When the color has developed the object is removed and air dried. When dry, spray with a matt acrylic spray.

BRASS

VINEGAR AND RICE

Colors: blue/green mottle crystal, semi gloss.

DIRECTIONS:

vinegar (red wine, balsamic, white or apple cider)
rice

The object to be colored is packed in rice which has been evenly moistened with vinegar and left for 7 days. When the color has developed the object is air dried and sprayed with a matt acrylic spray.

BRASS

SALT AND SAWDUST

Colors: yellow to blue/green mottle, semi matt.

DIRECTIONS:

salt (1/3 the amount of sawdust)
sawdust
water

The object to be colored is packed in sawdust mixed with salt and evenly moistened with water. The object is left for 14 days. When the color has developed the object is air dried, then rinsed with cold running water. When dry, spray with a matt acrylic spray.

BRASS

SALT, STEEL, AND SAWDUST

Colors: brown-black stipple, semi matt.

DIRECTIONS:

salt (1/4 the amount of sawdust)
steel filings (1/3 the amount of sawdust)
sawdust
water

The object to be colored is packed in sawdust mixed with steel filings, and salt. The mixture is evenly moistened with water. The object is left for 14 days. When the color has developed the object is rinsed in cold water. When dry, spray with a matt acrylic spray.

BRASS

VINEGAR (sprayed on)

Colors: orange to brown variegated, semi gloss.

DIRECTIONS:

vinegar (red wine, white, or apple cider)
soap, few drops to act as a binding agent.

The object to be colored is heated with a torch and the solution is applied lightly with a spray bottle. Repeated applications of the vinegar gives the best results. Continue heating and spraying. The metal will gradually change from yellow to orange to brown. Allow the object to cool completely before touching. Once cool, wax.

BRASS

PEANUT OIL

Colors: brown stippled, semi gloss.

DIRECTIONS:

peanut oil
heat

The object is rubbed with a light coat of peanut oil. Rub the oil on with a soft cloth or your hands. Place the object on a fire brick in an annealing pan and begin to heat with a soft flame using a torch. Once the peanut oil begins to smoke remove the flame. Let the peanut oil continue to smoke until it stops. At this time decide on the color you want. Either let the object cool, or add additional heat to achieve a darker color. When the finished piece is cooled, but the surface of the peanut oil is still sticky to the touch, you have not heated it enough. If this occurs, repeat the heating and smoking process. The peanut oil should form a hard shell on the metal surface.

BRASS

LEMON JUICE, SALT, RICE

Color: yellow to yellow/green mottled, semi matt.

DIRECTIONS:

fresh squeezed juice from lemons and some grated rind
salt (1/4 to amount of rice)
rice

The object to be colored is packed in rice, grated lemon rind, and salt which has been moistened with lemon juice, and left for 7 days. When the color has developed the object is air dried, loose particles brush off, rinsed in cold water, dried, then sprayed with a matt acrylic spray.

BRASS

CAT URINE IN CAT LITTER

Colors: blue/green mottled, semi matt.

DIRECTIONS:

self clumping cat litter with no perfumes or dyes
cat urine

Scoop the clumps of cat urine and cat litter in a plastic container. Bury the object to be colored in the moist litter. Seal the container and let sit for 2-3 weeks. Remove and let air dry, brush off any litter, rinse with cold water, dry, then spray with matt acrylic spray.

STERLING SILVER

LIVER OF SULFUR (Potassium sulphide)

Colors range from magenta/blue to brownish gray to gray black.

DIRECTIONS:

2-4 cups of water
add a chunk of liver of sulfur the size of a pea.

This patina should be done in a well ventilated area. Use a container that can be heated on a hot plate. A glass container, such as pyrex, works best. Heat the solution, but do not boil. Dissolve the liver of sulfur completely. Test and adjust the strength of the solution. Make sure the metal is perfectly clean and free of any oil. Wearing rubber gloves, hold the piece by the edges and dip into the warm solution until the color is achieved. A dark color is best if built up slowly, by alternately dipping and rinsing in cold water. If the surface is uneven, try scrubbing very lightly with a green scotch brite pad, then continue rinsing and dipping. For small area this solution can also be applied with a brush, but be careful when rinsing that streaking does not occur. When the desired color is achieved, dry thoroughly and wax. If the metal is textured, use a matt acrylic spray.

STERLING SILVER

LIVER OF SULFUR AND HYDROGEN PEROXIDE

Colors: range from a magenta/blue to green.

DIRECTIONS:

2-4 cups of water

a chunk of liver of sulfur the size of a pea

1-2 teaspoons of hydrogen peroxide

This patina should be done in a well ventilated area. Use a container that can be heated on a hot plate. A glass container, such as pyrex, works best. Heat the solution of water and hydrogen peroxide, but do not boil. After the solution is heated, add the liver of sulfur and dissolve completely. The solution will become milky. Test and adjust the strength of the solution. Make sure the metal is perfectly clean and free of any oil. Wearing rubber gloves, hold the piece by the edges and dip into the warm solution until the color is achieved. The color is best if built up slowly, by alternately dipping and rinsing in cold water. If the surface is uneven, try scrubbing very lightly with a green scotch-brite pad, then continue rinsing and dipping. For small areas this solution can also be applied with a brush, but be careful when rinsing that streaking does not occur. When the desired color is achieved, dry thoroughly and wax. If the metal is textured, use a matt acrylic spray.

STERLING SILVER

LIVER OF SULFUR AND AMMONIA

Colors: range from magenta/blue to a black.

DIRECTIONS:

2-4 cups of water

add a chunk of liver of sulfur the size of a pea

1-2 tablespoons of ammonia

This patina should be used in a well ventilated area. Use a container that can be heated on a hot plate. A glass container, such as pyrex, works best. Heat the solution, but do not boil. Dissolve the liver of sulfur completely, then add the ammonia. Test and adjust the strength of the solution. Make sure the metal is perfectly clean and free of any oil. Wearing rubber gloves, hold the piece by the edges and dip into the warm solution until the color is achieved. The color is best if built up slowly, by alternately dipping and rinsing in cold water. If the surface is uneven, try scrubbing very lightly with a green scotch-brite pad, then continue rinsing and dipping. For small areas this solution can also be applied with a brush, but be careful when rinsing that streaking does not occur. When the desired color is achieved, dry thoroughly and wax. If the metal is textured, use a matt acrylic spray.

STERLING SILVER

HEAT (immersion)

Colors: range from a soft orange to gray, gloss.

DIRECTIONS:

Object heated and plunged into boiling water.

The object is heated evenly to a dull orange color using a blow torch or a kiln. It is then immediately plunged into a bath of turbulently boiling water. When it has cooled to the temperature of the water, it is removed from the bath and washed in cold water. It is then dried and a wax finish is used.

The temperature of the object as it enters the water is critical. The boiling water and the heat source should be arranged so that not too much heat is lost during the transfer into the water.

This patina is best on small scale objects to obtain an even color.

STERLING SILVER

CLOROX BLEACH

Colors: range from a magenta to gray, gloss.

DIRECTIONS:

Clorox bleach

The object to be colored must be perfectly clean and free of any oil. The object is immersed in container of Clorox bleach for 30 seconds. Once the color is achieved, remove from the solution and rinse thoroughly in cold water, for 5 minutes. The Clorox bleach can also be painted on, but be aware of streaking. The color appears in 30 seconds. This color works best on smooth and high polished surfaces.

STERLING SILVER

PEANUT OIL

Colors: range from brown to black, semi gloss.

DIRECTIONS:

peanut oil

heat

The object to be colored is rubbed with a light coat of peanut oil. Rub the oil on with a soft cloth or your hands. Place the object on a fire brick in an annealing pan and begin to heat with a soft flame using a torch. Once the peanut oil begins to smoke, remove the flame. Let the peanut oil continue to smoke until it stops. At this time decide on the color you want. Either let the object cool completely or add additional heat to achieve a darker color. If the finished piece is cooled, but the surface of the peanut oil is still sticky to the touch you have not heated the object enough.

If this occurs repeat the heating and smoking process. The peanut oil should form a hard shell on the surface of the metal.

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