Patina Formulas for 
Brass, Bronze and Copper

The Science Company has collected these recipes from a variety of sources through the years. The formulas have not been personally tested so there is no guarantee that they will work. We suggest they be employed on a "trial and error" basis first so their effectiveness can be judged by the user.

**Metal Preparation**

Clean the metal surface - All traces of oils and oxidation should be removed before applying patina chemicals. The most common oils are oils from your hands. Use rubber gloves during washing and subsequent handling. Surfaces can be cleaned by bead-blasting immediately before patina application. A soaking in 10% sulfuric acid for 5 to 6 hours also serves to remove any traces of surface dirt or oil. Other methods include a good detergent wash and rinse in water followed by wiping with a solvent like methyl alcohol. Rubbing with Scotchbrite pads or steel wool during washing improves the surface for patina by removing oxidation. Dry with compressed air, clean towels or a hair dryer. Patina within 1/2 hour.

**Variables affecting patina results:**

- Composition of the metal.
- Patina formula used.
- Purity of chemicals and water used.
- Surface preparation including oil and oxidation removal and thoroughness of washing.
- Method of application:
  - Hot Process (hot solution, hot metal, hot rinse water).
  - Cold Process (cold solution, cold metal, cold rinse water)

**Maintenance of finished patina.**

Once a patina has been created on a metal surface it can be left to continue weathering naturally. Weathering can be arrested at the desired point by applying a suitable oil, e.g. raw linseed oil or lemon oil. Colored finishes can be protected with a nonporous lacquer or a wax coating to improve their resistance to scratching, flaking and tarnishing. Apply wax while the work is still warm to seal the patina. Re-wax when completely cool and buff.
1. Light to Dark Brown

Ingredients

- Ferric Nitrate... 1/2 tsp [MORE INFO]
- Distilled Water... 1 pint

Process

Heat metal and apply liquid. (Red to reddish brown has also been reported using this recipe.)

2. Brown to Black

Ingredients

- Sulfurated Potash grape sized lump (crushed). [MORE INFO]
- Distilled Water... 1 pint

Process

Hot or cold process. Use fresh solution each time.

3. Blackish Brown

Ingredients

- Ferric Nitrate... 2 oz
- Distilled Water... 1 pint
- Sulfurated Potash... 1/4 oz

Process

Hot process. Mix in the order given.

4. Florentine Brown

Ingredients

- Ferric Chloride... 1 tsp
- Ferric Nitrate... 1/2 tsp
- Distilled Water... 1 pint
Process

This old Italian formula produces a rich brown patina.
Apply evenly with a brush, sponge, or sprayer and let it dry. When a light brown rust color appears rinse well with cool water.
Dry with newspaper - it is very important to use newspaper. You may want to use a slightly damp paper.
Burnish the surface with steel wool or wire brushes. Leave over night
Repeat the process for darker result.
When finished, wax over the patina to darken and set the color.

5. Antique Green

Ingredients

- Ammonium Chloride... 1/3 oz
- Cupric Sulfate... 3 oz
- Distilled Water... 1 quart

Process

Hot process. Solution hot (180 to 190°F), metal hot (200°F), cold wash water applied after metal has cooled to around 100°F. Wash solution over metal surface, let dry, then wash piece in cool water. Repeat until color develops.

6. Basic Green

Ingredients

- Cupric Nitrate... 1 tsp
- Distilled Water... 1 pint

Process

Hot process, semi-transparent patina. Heat metal and apply a fresh mixture for each coloring.

7. Blue Green

Ingredients

- Sodium Thiosulfate... 1/4 oz
- Ferric Nitrate... 2 oz
- Distilled Water... 1 quart
Process

Hot process. Solution hot (180 to 190°F), metal hot (200°F), cold wash water applied after metal has cooled to around 100°F. Wash solution over metal surface, let dry, then wash piece in cool water. Repeat until color develops. For Yellow Green, dip in dilute nitric acid, then wash and dry.

8. Cold Process Green

Ingredients

- Cupric Nitrate... 40 gm
- Ammonium Chloride... 40 gm
- Calcium Chloride... 40 gm
- Distilled Water to make 1 liter

Process

A cold process, opaque patina. Frog green results after several applications, 1/2 hour intervals. Color is not satisfactory alone. Combines well with most brown and black cold process patinas.

9. Light Green

Ingredients

- Ammonium Chloride... 16 units
- Sodium Chloride... 16 units
- Cupric Sulfate (optional)... 16 units
- Ammonium Hydroxide... 16 units

Process

A cold process, opaque patina which should be applied at 12 hour intervals for several days. For deeper green add 16 units of cupric sulfate.

12. Purple to Light Green

Ingredients

- Sodium Chloride... 5 parts
- Ammonium Hydroxide... 4 parts

Process

Parts by weight. Early stages of this recipe produce purple. Additional applications and chemical action turn the metal light green.
13. Transparent Blue

Ingredients

- Sodium Thiosulfate... 60 gm
- Nitric Acid Concentrated... 4 gm
- Distilled Water... 1 quart

Process

A transparent, dip process patina. A preservative such as paste wax or polyurethane is necessary. May produce a grey blue when tap water is used.

14. Blue

Ingredients

- Sulfurated Potash... 15 gm
- Ammonium Chloride... 200 gm
- Distilled Water 1 quart

Process

Brush onto surface.

15. Straw Yellow

Ingredients

- Ferric Nitrate... 1/2 tsp
- Distilled Water... 1/2 pint

Process

Heat metal and apply hot liquid.

16. Golden Yellow

Ingredients

- Sodium Thiosulfate... 1/4 oz
- Ferric Nitrate... 2 oz
- Distilled Water 1 quart

Process

Heat solution to a boil. Dip.
17. Deep Rust Red

Ingredients

- Cupric Nitrate... 48 grains
- Ammonium Chloride... 48 grains
- Calcium Chloride... 20 grains
- Cupric Sulfate... 10 grains
- Oxalic Acid... 10 grains
- Distilled Water... 4 oz
- Nitric Acid 10%

Process

Brush to surface for color. Then dip into diluted (1 acid:8 water) Nitric acid for 1/2 hour, remove, wash and dry.

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18. Purple

Ingredients

- Sodium Chloride... 5 parts
- Ammonium Hydroxide... 4 parts
- Ammonium Chloride... 5 parts
- Glacial Acetic Acid... 4 parts
- Distilled Water... 32 parts

Process

Parts by weight. Brush to surface.

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19. Antique White

Ingredients

- Bismuth Nitrate... 2 tsp.
- Distilled Water... 8 oz.

Process

Heat metal and apply liquid. Variations of this formula add a pinch of Sulfurated Potash, Ferric Nitrate, or Cupric Nitrate for a slight coloring effect.
Formulas Suggested for Specific Metals.

20. Red - semi-matt (for Copper & Copper Plate)

Ingredients

- (A) Cupric Sulfate... 25 gm
- Distilled Water... 1L
- (B) Ammonium Chloride... 0.5 gm

Process

Boil immersion (A) 15 min.
Boil immersion (A)+(B) 10 min.
Immerse in boiling cupric sulfate solution about 15 min. or until color well developed. Remove to hot water while ammonium chloride is added to the cupric sulfate solution. Then immerse about 10 min. Remove and wash in hot water. Dry and finish.

Important note: In general, chemically induced finishes are unsuitable for use on articles to be used with food.

21. Dull Pink (for Copper & Copper Plate)

Ingredients

- Cupric Nitrate... 1 tsp
- Nitric Acid 10% ... 100 ml
- Distilled Water... 1L

Process

Hot immersion - 5 min.
Immerse in hot solution (140-158°F, 60-70°C) which etches surface. Remove after 5 min., wash in warm water and air dry. Wax finish.