

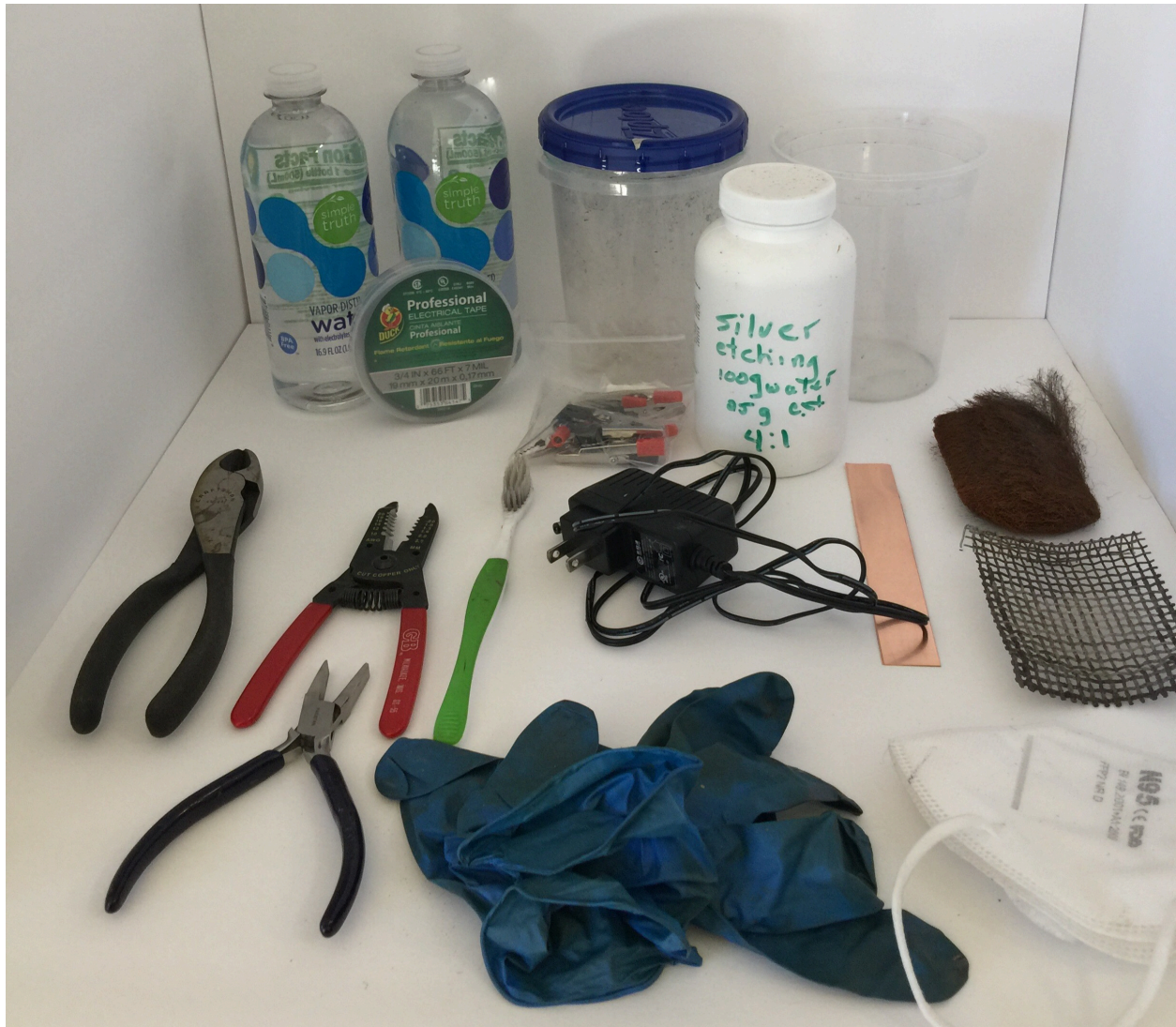
# Etching Silver with Cupric Nitrate

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This form of etching silver is called E-Etching. It is an electrolytic process with a non-toxic chemical. (Non toxic does not imply that you should eat this for breakfast, just that it is safe to handle under normal circumstances). If you wish, you can request an MSD sheet when you order the chemical.

## You will have to do 5 things to get started with etching silver:

1. Make the set up
2. Clean up the piece of silver you plan to etch
3. Prepare the design on your silver to be etched
4. Do the etching.
5. Clean up your etching bath



# Etching Silver with Cupric Nitrate

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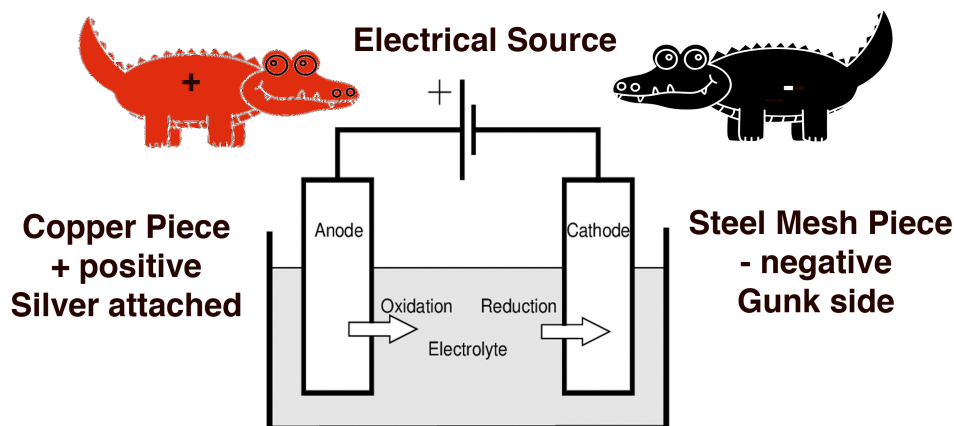
## To make the set-up you will need:

- Cupric Nitrate Trihydrate. Do not get this from Amazon as they have two products listed and the one you need is way overpriced. Go to [Sciencecompany.com](http://Sciencecompany.com) and order Cupric Nitrate 500g. This is the most costly part of the whole set up, it will cost about \$35.00 but will last you a lifetime.
- Distilled water (grocery store)
- 1 quart container with a wide mouth and a screw on lid (Zip Lock makes a good one of these)
- 1 quart container cheap kind from \$ store.
- clean piece of copper about 1" wide and about 8" long 20-24g

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- stainless steel screen (hardware store, the one I have I got from an Enamel Supplier)
- DC power supply 3-5 Volts (old cell phone charger from before smartphones, available at Thrift Stores works great, don't get any higher charge than 5V, it can be dangerous)
- 2 alligator clips, one red and one black (hardware store or possibly Harbor Freight)
- Wire cutters and wire strippers (Harbor Freight, not very expensive)
- voltage meter (Harbor Freight about \$10.00)
- Philips screw driver
- wire wrapping tape (hardware store)
- mask and rubber gloves (just for mixing)
- Plastic spoon or wooden stirrer
- steel wool and a glass bowl large enough to hold your silver piece
- a mesh strainer

Don't **PANIC**- Positive is **A**node, Negative is **C**athode





# Etching Silver with Cupric Nitrate

## **To make the set-up:**

1. **Do NOT plug in the power cord!!!!** Cut the charger end off the wire opposite the plug end and toss the charging piece.
2. The wires are rubber wrapped. Pull the two wires apart for about 1 foot.
3. Using the wire strippers, strip about an inch or two off the end of both wires. Do this with care as you don't want to lose the many tiny wires that make up each main wire.
4. Plug in the charger and don't touch the open wires, and DO NOT let your two open wires touch each other.
5. Using the voltage meter, determine which wire is positive and which is negative.
6. Attach the red alligator clip to the positive wire and the black alligator clip to the negative wire. Do this part with care so there is a good connection between the wires and the clips. Use your electrical tape to cover any of the exposed wires.
7. Fill the container with 1000 grams of distilled water. (if you have a 1 quart container fill to within an inch of the top)
8. Put on your gloves and mask
9. Add 250 grams of the Cupric Nitrate to the water and mix with a plastic spoon or wooden stirrer.
10. Bend over the top of the copper piece so it sits nicely on the lip of your container with the remainder hanging down inside the container.
11. Prepare the stainless steel mess the same way.
12. The copper and the steel should rest parallel to each other.

## **Preparing the silver for etching. You will need:**

- Sterling silver in a gauge of your choice in a size that will fit in the container while leaving space all around it. It should not be so long as to stick up above the water line in your tank.
- Dawn or Barkeepers Friend and a brush to clean the silver
- Resist. My preference is StazOn Ink pad (and extra ink) and stamps (any Craft store or online). Resist can be StazOn ink pad and stamps, PnP with

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design on it, Print makers Ground, Future Floor Wax (I've never tried this). Sharpie Markers don't work very well.

- Packing tape
- Scissors and a burnishing tool.

## **To prepare your silver and get it ready to etch:**

1. Clean your silver and dry it.
2. Choose your image stamp. Ink the stamp well and stamp your silver.
3. Let it dry for 1/2 hour to be safe.
4. If damp, dry the copper piece.
5. Pull off a 5-6" piece of packing tape and lay on the table sticky side up.
6. Turn the copper piece so the bent side is down and lay the bottom side onto the tape about a 1/2" down from the bent top.
7. Lay your silver piece, stamped side up, on top of the copper and the tape.
8. Burnish the tape down well. This is important as it will keep the etching fluid from degrading the back side of your silver.
9. If there is any silver on the back that isn't covered by tape, add more tape where necessary and burnish. The tape protects the back side from etching away.

## **Now to get on with the etching.**

The copper piece in the container is your anode (RED positive). The steel piece is your cathode (BLACK, negative). I have a note on top of my container that says this cause I forget.

1. Put your copper/silver/tape sandwich back into the etching container.
2. Attach the RED alligator clip to the copper at the top of your container.
3. The steel piece should still be in your container. Attach the BLACK alligator clip to the steel piece where it tops your container.
4. Plug it in. (you may see a few tiny bubbles in the container when you do this)

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5. Timing will depend on how deep you want to etch your silver and how strong your solution is.
6. Start at 10 minutes and check it every 2-5 minutes after that. It is hard to see the etch, but do not rub your finger over it as you can rub off your stamped ink design at this point.
7. When it's etched to your satisfaction, unplug the plug and remove the clips from your set up.
8. Wear gloves if your skin is sensitive. Remove the copper/silver/tape sandwich. Place the sandwich in a bowl with water and steel wool.
9. Remove the silver from the sandwich. Clean it under running water with a soft brush. Dry. If any ink or marker remains acetone will remove it.
10. Admire your lovely etched piece.
11. Clean your copper anode.
12. The container now contains your chemical solution (which you can save indefinitely), and a lot of gunk.
13. Remove the steel piece and place in the bowl with the steel wool. Then clean thoroughly.
14. Pour your liquid from the container through a mesh sieve, deposit this onto newspapers or paper towels and toss in the garbage. It is not toxic.
15. Do not store your anode and cathode in the container with the liquid and chemical. Cap the liquid in the container and save for another use. If in time, your water level drops, add more. If you are taking too long to etch, add a bit more chemical. but only a little. You are only replacing, not ramping up. I keep all the necessary items in a large plastic container so everything is there and ready to go the next time I want to etch.